SELWOOD SELTORQUE S100

Model Designation

From the 1st January 2004 the Seltorque 100C will be known as Seltorque S100.

Operating and Service Manual

The products of Selwood Limited, are designed, developed and produced in the company's Chandler's Ford factory. Many features are covered by world-wide patents. Product names such as Spate, Simplite and Seltorque, are registered trade marks.

As all products are subject to continuous development, the company reserves the right to alter the specifications and information given in this manual without prior notice.

Whilst every care has been taken in the preparation of this publication the information it contains must not be regarded as binding.

Amendments to this publication will only be issued to cover those design changes which fundamentally alter the build or operation and servicing procedures. They will be distributed through the company's dealers and agencies.

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Instructions for Ordering Replacement Parts

1. Always quote the pump serial number located on the plate fastened to the bearing and air pump mechanism housing.
2. Always quote the part number(s) (ten digit) of the component(s), NOT the item number(s).
3. Always quote the description of the component(s).

Items usually supplied together as sub-assemblies will have the sub-assembly part number printed at the bottom of the relevant page.

Additional copies of this manual may be ordered from Selwood Limited, Pump Division, by quoting the publication number shown on the outside back cover.

HEALTH AND SAFETY AT WORK

April 1975

As manufacturers of pumps and associated equipment we wish to inform you that, in compliance with Section 6 of the Act, safety precautions should be taken with our products.

We take every care to ensure as is reasonably practicable that our products are safe and without risk to health when properly used. Nevertheless, appropriate health and safety precautions must be taken, and in particular you are requested to have special regard to the operational and safety requirements leaflet P769 which accompanies each pump on despatch from our premises.

Our products also conform to the E.E.C. Machinery Safety Directive and carry the C.E. mark.

CALIFORNIA USA PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

WARNING

Pumps and engines may be fitted with seals or 'O' rings manufactured from **VITON** or similar material.

When temperatures reach 400°C (720°F) a corrosive acid is produced, which cannot be removed from the skin.

If signs of material decomposition are evident, or if in doubt, **always wear disposable heavy-duty gloves**.

SELWOOD SELTORQUE S100

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1 GENERAL INFORMATION

1.1 Installation

1. The pump unit and its associated baseplate or trolley mounting should be positioned on a firm horizontal platform, and in the case of portable units restrained from accidental movement.
2. If the pump is fitted with push-on type suction and delivery spigots the hoses must be firmly secured on these spigots with heavy duty clamps or clips capable of withstanding the system operating pressure.
3. The integrity of the hose clamping arrangements should be checked at regular daily intervals in the case of static installations or whenever the pump is repositioned in the case of portable units.
4. Similar precautions should be taken with clamps securing multiple lengths of hose on installation where long delivery and suction lines are involved.
5. Delivery hose and any associated pipework should be capable of withstanding the maximum system operating pressure. Suction hose should be of the non-collapsible variety.

1.2 Operation

1. The pump should only be operated within the speed and pressure limits detailed in the operating handbook for the model in question.
2. If there is a danger of freezing, the fluid normally retained within the pump between operating cycles should be drained off through the drain taps provided.
3. Where protective caps are used to prevent damage to the suction and delivery spigots during storage or in transit they must be removed before the pump is started up.

1.3 Maintenance

1. Inspection and maintenance procedures are detailed in the operating and servicing manual for the model in question.
2. Replacement parts. Only the manufacturers or factory approved components should be used as replacement parts and where necessary they should be fitted with the assistance of the special purpose tools indicated in the operating and servicing manual.
3. All maintenance work must be carried out with the pump and engine/motor stationary.

1.4 I.C. Engines

1. Where I.C. engines are used to power the pump they have been mounted in accordance with the engine manufacturers recommendations and adequate guarding provided between the pump and engine.
2. **Exhaust and Exhaust Pipes.** If there is a risk of accidental contact by operators. The exhaust system should be lagged or screened and the outlet directed away from operators or other persons likely to be nearby. Direct contact with flammable materials of all types must be avoided. The importance of adequate ventilation to ensure removal of exhaust fumes when engines are operated in enclosed or covered accommodation cannot be over-stressed. Engines should not be run in hazardous explosive atmospheres.
3. **Access and Operation.** Ensure that the operator can start, control and stop the engine easily by making all controls readily accessible. Fit remote controls if access is difficult. Follow the instructions laid down in the engine manufacturer's Operators Handbook for starting, operating and stopping procedures.
4. **Fuel.** In addition to the fire hazard associated with fuel and lubricating oils, preventative action is necessary with respect to leakage, contamination and bodily contact.
5. **Electrical Connections.** It is essential that earth terminals are connected with an absolutely sound earth point and care should be taken to ensure that the correct sized conductors are selected to suit the current and distance to be carried.

1.5 Fitting Instructions for Centaflex Couplings (Diesel Engines)

IMPORTANT NOTES – OBSERVE STRICTLY:

The Centaflex Coupling Assembly is supplied in a pre-assembled state and must be fitted to the pump drive shaft and engine flywheel in this state. On no account should any of the components that make up the coupling assembly be dismantled unless it has become necessary to service one of the component parts. Typically, the most likely component to require replacement will be the rubber element and servicing of this item is explained in Section 1.5.3 below.

The coupling assembly consists of a central steel hub whose outside diameter locates within a bore of a rubber element and is secured within the element using three cap screws that pass radially through its outer diameter. In turn, the rubber element locates onto three horizontal pins, equally disposed on a PCD and each secured to the face of a steel adaptor plate with cap screws. The cap screws securing both the central steel hub and the horizontal pins are torque tightened to the values shown in the table in Section 1.5.2 below.

The rubber element itself is free to slide on the horizontal pins. It is therefore unnecessary to remove the cap screws that secure the pins unless the pins themselves have become damaged.

1.5.1 Preparation of the Centaflex Coupling for Pump Removal

NOTE: Before commencing, mark the position of the coupling assembly on the pump drive shaft. Pay particular attention to the size of the gap between the back of the rubber element and the face of the steel adaptor plate. This gap has been factory set and is maintained when the setscrew in the steel hub is locked in position.

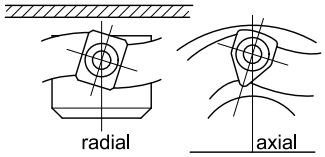
1. In order to allow the pump drive shaft to be withdrawn from the steel hub of the coupling, it will be necessary to loosen the setscrew located in the outside radius of the steel hub just in front of the rubber element. The setscrew clamps the coupling assembly onto the top of the pump drive shaft key and it is not necessary to completely remove this screw.
2. Once the setscrew is loose the pump drive shaft is free to be withdrawn from the hub of the coupling. Note too that when the setscrew is loose the coupling assembly is free to slide in either direction onto the pump drive shaft or onto the horizontal pins.

1.5.2 Centaflex Coupling Assembly Sequence

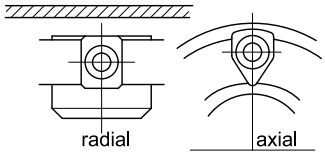
1. The radial and axial screws connecting the rubber element to the hubs must all be tightened to the torque given in the table below, using a torque wrench.

Centaflex Size	Screw Size	Tightening Torque	
		Nm	mKp
16/22	M12	85	8,5

2. Tightening with a torque wrench is particularly important. Tightening by feel will not do as experience has proved the tightening torques in such cases are far too low. Tightening torques which are too low will inevitably lead to slackening of the screws in service and consequently to the destruction of the coupling.
3. Ensure that on tightening the screws, the aluminium bushes in the rubber part are not twisted at the same time, but sit straight. In order to reduce friction between the screw head and the aluminium part, a small amount of grease should be applied under the head of the screw before fitting.
4. If necessary, use a suitable tool for applying counter pressure on the element to prevent twisting of the rubber part during tightening of the screws. This is particularly important with radial screws, otherwise the cylindrical faces between the aluminium insert and the hub will not engage on the full area, but only on two corners. This will inevitably lead to slackening of the screws and subsequent destruction of the coupling. If the coupling is supplied in a pre-assembled state do not dismantle it, but fit it in this condition.



WRONG

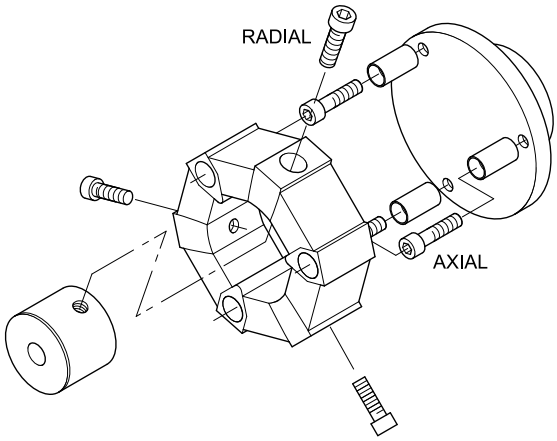


CORRECT

1.5.3 Replacement of the Steel Hub and Rubber Element

NOTE: Once the Centaflex coupling has been prepared in accordance with Section 1.5.1 above, it is free to be removed from the horizontal pins on the face of the adaptor plate.

1. If it becomes necessary to replace either the steel hub or rubber element, the three radial caps screws must be removed in order to separate the two components. When removing these cap screws it is recommended that the coupling assembly remain on the horizontal pins for ease of their removal.



2. Once the three radial screws are removed, the steel hub can be separated from the rubber element. Also at this stage the rubber element can be removed from the horizontal pins of the adaptor plate.
3. Replace the rubber element and/or steel hub as necessary to refurbish the assembly.
4. Fit the rubber element onto the horizontal pins of the adaptor plate.
5. Insert the steel hub into the centre of the rubber element and align the radial mounting holes with tapped holes in the hub.

6. Fit the three radial cap screws in accordance with the instructions at Section 1.5.2.
7. The coupling assembly is now prepared for the replacement of the pump.
8. Once the pump drive shaft is engaged in the coupling hub bore, set the position of the coupling assembly to that previously marked when Section 1.5.1 was performed.
9. Tighten the setscrew that locks the steel hub of the coupling assembly to the pumps drive shaft key.

1.6 Electric Motors

1. All electrical connections should be made through adequately rated conductors and starters. Isolators and other associated switchgear should be of adequate capacity for the imposed power loadings.
2. All electrical equipment should be adequately earthed.
3. Isolate the power supply before carrying out any commissioning, servicing or maintenance work on the pump or electric motor.
4. Where electric motors are to be operated in hazardous or explosive atmospheres they should be of the flameproof enclosure type appropriate to that atmosphere.

You are requested to take such steps as are necessary to ensure that this information is made available to all those involved with the use of our products. This information must be made available not only to your own employees at their workplace, but also to anyone who may purchase or otherwise acquire (hire) such products for use in his own workplace.

It is our intention constantly to review our obligations under the Health and Safety at Work Act and we will be issuing from time to time further information with regard to the safe application, use, inspections, and service associated with our products.

1.7 Fitting Instructions for Fenner Couplings (Electric Motors)

1. Adjust position of pump on chassis until the inside faces of the coupling flanges are parallel to each other. The distance between the faces should measure from 24 to 29mm (15/16" to 1 1/8"). Whilst adjusting the pump's position, it is also necessary to achieve alignment of the shaft centre-lines within 1.5mm (1/16") of each other by laying a straight edge cross the two flanges at several positions around their circumferences. Fully tighten the nuts immediately the coupling flanges are correctly aligned. Recheck alignment after tightening.
2. The flexible coupling assembly should now be completed. Open-out the tyre and fit over the coupling flanges ensuring the tyre beads seat properly on the flanges. To ensure proper seating, it may be necessary to strike the outside diameter of the tyre with a small mallet. When seated there should be a gap between the ends of the tyre of about 1/8" (3mm). Tighten clamping ring screws in flange alternately and evenly (approximately half a turn per screw) working round the flange until 17lbf ft (2.35kgf m) torque is achieved.

1.8 Seltorque S100 Standard Data

Capacity	160M^3/h 35200UK gal/h
Delivery Head	21.3m 70ft
Self Priming Lift	8.8m H_20 29ft H_20
Solids Size	75mm 3in
Air Handling Capacity	24l/s 50ft^3/min
Pump Speed Max	1600rpm
Port Size BS4504 Table 6	100mm 4in

2 ROUTINE MAINTENANCE

Lack of routine maintenance is the most frequent reason for the break-down of pumps. We earnestly advise users to ensure that at least the following actions are taken.

1. Check these three oil levels daily:
   a) Engine oil.
   b) Bearing housing oil.
   c) Flushing chamber oil.
2. Always drain water from the pump in cold weather when it is not running. Drain:
   a) Pump body.
   b) Delivery valve chamber.
   c) Both sides of air pump (4 drain taps if twin prime).
3. Do NOT run the pump if significant quantities of water escape through the exhaust valve of the air pump. This pump is designed to handle moisture-laden air, but not to pump a high percentage of water. Refer to servicing instructions for further advice.
4. Do NOT run the pump if malfunction is suspected in any of its parts. In particular, it must immediately be serviced if the level of oil in the flushing chamber varies daily, or if the oil becomes contaminated with the pumped fluid.
5. A hose strainer should always be fitted to the free end of the suction line if there is a possibility of over-sized solids entering the pump. The dimensions of rocks, pebbles, etc., must not exceed 75mm (3"). Larger soft solids, however, of the type found in abattoir duties, for example, will pass freely through the pump. Refer to Selwood Pumps if in need of advice in this connection.

6. As loss of prime and indeed loss of on-stream performance can easily arise as the result of leaking pipe-work joints, we recommend that all line fittings associated with the pump should be checked periodically for air-tightness.
7. It is most Important to use the correct fuel oil in the engine. Make sure that it is appropriate for the weather conditions (summer or winter) and that it is clean and free from water and foreign matter. Unsatisfactory running performance, excessive wear and damage can all result from the use of an Incorrect or contaminated fuel.
8. Periodically check the tension of all nuts and bolts, especially those securing the engine and pump to the chassis.
9. Pump servicing must always be carried-out in accordance with the instructions given in this manual. Only components supplied and approved by Selwood Pumps should be used. It is advisable to hold a small stock of spare parts to cover break-down circumstances. The Company will be pleased to give advice in this connection.
10. Engine servicing must always be carried-out in accordance with the instructions given in the manufacturer's manual. Do not hesitate to contact Selwood Pumps if the need for further advice arises.
11. Please contact Selwood Pumps in the event of experiencing difficulty when servicing. The company will also be very pleased to give advice in connection with the machine's installation, operation and maintenance.
12. All practical work must be carried-out in compliance with the Health and Safety at Work Act, 1975. Always start the engine in accordance with the manufacturer's instructions.

NOTE: If the above advice is followed, the likelihood of an expensive break-down will be greatly diminished. The pump should give a long and trouble-free life if these measures are put into effect.

3 LUBRICATION AND FASTENING TORQUES

3.1 Pump Lubrication

It is most important to maintain the correct levels of oil in the flushing chamber and bearing housing, and to ensure that the oil is of the recommended quality and is free from contamination. Selwood recommend the use of the following BP/Castrol products, which should be applied as per the following table. In some territories, the following grades may be known under differing trade names, please contact Selwood if problems occur in identifying the correct product.

COMPONENT	BP GRADE
ENGINES	Vanellus C5 Global
Bearing Housing	C5 Global
Flushing Chamber	C5 Global
Actuator Bore	Castrol Rustilo 431
Impeller Bore	Castrol Rustilo 431
Paper Gaskets	BP Energrease LS-EP2
Axle Shafts	BP Energrease LS-EP2
Axle Pivot Assembly	BP Energrease LS-EP2
M10 Screws - Port Plate to Diffuser	Castrol Optimoly Paste HT

COMPARTMENT	SERVICE/DRAIN	
	CHANGE OIL & FILTERS	CHECK & TOP UP
ENGINE	250 Hours	Daily
Bearing Housing Flushing Chamber	250 – 500 Hours	Daily
Actuator Bore Impeller Bore Shaft Sleeve Bore	ON ASSEMBLY	-
Paper Gaskets	ON ASSEMBLY	-
Axle Shafts Axle Pivot Assembly	6-12 Months	-
M10 Screws - Port Plate To Diffuser	ON ASSEMBLY	-

3.1.1 Commissioning Period

Drain both pump chambers and engine within 100-150 running-hours of commissioning either a new, or rebuilt pump, and refill with new oil to level plugs.

Flushing chamber capacity about 1.5 litres (2.5 pints).

Bearing housing capacity about 1.8 litres (3 pints).

Engine sump – Refer to Engine Instruction book.

3.1.2 After Commissioning Period

If the pump is driven by a diesel engine, the oil in both pump chambers should be drained and renewed simultaneously with the time schedule laid down by the engine manufacturer. This will usually require the pump oils to be drained and replaced every 250 running hours. Under no circumstances should the period for the pump exceed 500 running hours.

3.2 Fastening Torques

Failure to tighten threaded fasteners correctly can easily lead to assembly breakdown. It is very important, therefore, when carrying-out the instructions in this manual, to achieve the appropriate tensioning torques. In some cases, specific requirements are described in the instructions which must always be implemented. The following torques, in particular, must be applied.

Item	Tightening Torques	
	lb ft	kgf m
(F29)(F30) M16 Pump/Engine/Fuel Tank to Chassis Fixings	180	25
(D36) Actuator Cap Screw 0015975000	60	8.3
(A22) Cap Screw M12 9005120552	60	8.3
(C01) Impeller Screw 9000120302	60	8.3
Air Pump Drive rod (D37) to Small end of Connecting Rod(D26) - M8 Fixing (D27) to (D38)	21	2.9

4 CONDITIONS OF WARRANTY

For a period of six months from delivery of any Selwood pump to the first user thereof, or twelve months from the despatch of any such pump by Selwood, whichever period is the shorter, Selwood will repair or, at its option, replace any component which in the opinion of Selwood has failed due to defective workmanship or materials.

This warranty does not apply to:

a) the driver or any accessories or proprietary fittings whatsoever;

b) any pump which, in the opinion of Selwood, has been altered, used, maintained, serviced or stored otherwise than in accordance with Selwoods instructions and professional practice;

c) any pump wherefrom the serial numbers have been removed or altered;

d) fair wear and tear;

e) consequential loss or damage.

5 MAJOR SERVICING

5.1 Air Pump Maintenance

5.1.1 Delivery and Suction Valves (A07)

Failure of the pump set to prime quickly or to discharge the expected volume of air, may simply be due to faulty valve operation.

To inspect and service, proceed as follows:

1. Remove air hose item (A01) from suction valve box (A03), after loosening relevant hose clips (A02).
2. Note the orientation of the suction valve box (A03) and exhaust cover (A04) before commencing. Remove exhaust cover (A04) and suction valve box (A03) by releasing nuts (A05) and spring washers (A06).

NOTE: The above actions allow the condition of the two valve rubbers (A07) to be checked. Do NOT attempt to remove valve studs (A08). If valve rubbers are damaged, replace with new components. Pull old valves off stud heads, and discard.

3. Check and, if necessary, clean valve seats in outer pump body (A15) and valve box (A03). Smear heads and grooves of studs with soft soap and push on new valves ensuring that they seat correctly.
4. The valve assemblies can now be replaced by reversing Instruction 1 and 2 of this procedure. It is advisable to fit new gaskets (A30).

5.1.2 Actuator Valve (A16)

Another reason for the pump set failing to prime efficiently or to handle the expected volume of air, could be malfunction of the actuator valve (A16).

To inspect and service, proceed as follows:

1. Remove nuts (A11), spring washers (A12), washers (A13) and screws (A14), allowing outer pump body (A15) to be removed complete with attached delivery valve assembly. The actuator valve (A16) may now be examined. If it fails to seat efficiently on actuator (A20) or is in any way damaged, it should be pulled off the actuator nut and discarded.
2. Whilst the actuator valve (A16) is removed, it is advisable to examine the condition of the valve seat in the actuator (A20), and also to check the security of the actuator screw (D36). This should be checked and tightened to 60lbf ft (8.3kgf m) torque.
3. To replace actuator valve (A16) smear soft soap on the conical end and groove of actuator screw (D36) and ease new valve rubber into position ensuring that it seats correctly.

NOTE: It is advisable to examine the condition of actuator seal (A18) whilst it is exposed. Servicing instructions start at Section 5.1.3 Actuator Seal (A18) Instruction 1.

4. To replace outer pump body assembly, fit and evenly tighten screws (A14), washers (A13), spring washers (A12) and nuts (A11), by sequentially turning each screw a small amount until they are all fully tensioned. It is important that the outer diameter of the actuator seal (A18) should be evenly clamped.

5.1.3 Actuator Seal (A18)

A further reason for the pump set failing to prime efficiently or to handle the expected volume of air, could be a faulty actuator seal (A18).

To inspect and service, proceed as follows:

1. Remove outer pump body (A15) complete with delivery valve assembly. Remove actuator screw (D36).

2. Set actuator to top dead centre (maximum distance from inner pump body), by rotating engine shaft with starting handle. Using a tool that will not cut the rubber (such as a blunt screwdriver) and a lubricant (soap solution), remove actuator seal (A18) by prising it from the inner pump body (A19). Remove actuator (A20) complete with seal from drive rod (D37).
3. To renew actuator seal (A18) remove failed component from actuator, insert firstly one side and then the other into the actuator groove, using a blunt tool that will not cut the rubber.

NOTE: The seal is handed and will not enter the inner pump body (A19) if fitted the wrong way round.

4. The correct assembly position for actuator seal (A18) is with the smaller diameter of its conical outer surface towards the inner pump body (A19). It will be seen that the housing in the body is tapered in the same direction as the external surface of the seal.
5. At this stage it is advisable to examine the condition of actuator neck seal (A21). This component should be replaced if any splits are evident on its visible surface. Refer to Section 5.1.4 Actuator Neck Seal (A21).
6. Smear soft soap on the outside section of new actuator seal (A18). Lightly grease actuator bore. Position actuator/seal assembly on drive rod (D37), locate actuator screw (D36) and tighten to 60lb ft (8.3kgf m) torque.
7. Replace actuator valve if removed (A16) first smearing soft soap on the conical end and groove of actuator screw (D36). The new valve should be eased into position by hand.
8. Before fitting outer pump body (A15) reciprocate the actuator by fitting and rotating the engine's starting handle about ten times to encourage centralisation of the connecting rod bearings. During this procedure, the actuator seal (A18) is likely to rotate slightly in the inner pump body (A19). Stop shaft rotation when actuator is at bottom dead centre (minimum distance from inner pump body).
9. Seat outside section of actuator seal in inner pump body recess by gently tapping with a non-metallic mallet.
10. Replace outer pump body assembly, and fit and evenly tighten screws (A14) washers (A13) spring washers (A12) and nuts (A11), by sequentially turning each screw a small amount until they are all fully tightened. It is important that the outside diameter of the actuator seal (A18) should be clamped evenly.

5.1.4 Actuator Neck Seal (A21)

Another reason for the pump set failing to prime efficiently or to handle the expected volume of air, could be failure of the actuator neck seal (A21).

To investigate and service, proceed as follows:

1. Remove outer pump body (A15) complete with delivery valve assembly, and actuator (A20) with actuator seal (A18) as directed in Section 5.1.3 Actuator Seal (A18) Instructions 1 and 2.
2. Release hose clip (A02) allowing air hose to be disconnected from suction valve box (A03). Screws (A22) should then be removed, leaving washers (A23) in inner pump body (A19).
3. The inner pump body can now be pulled by hand from the bearing housing, if necessary twisting to overcome any tendency of the seal (A21) to stick to drive rod (D37). Remove and discard failed seal.
4. Smear new actuator neck seal (A21) with soft soap to assist fitting, position in inner pump body (A19) and push both components over drive rod (D37) using assembly tool (Part No. 0015102000) smeared with soft soap. Check that washers (A23) are in place, and fit and fully tighten screws (A22). The heads of these screws should be fully contained within the recesses in the inner pump body.
5. Reassemble remaining components in accordance with Section 5.1.3 Actuator Seal (A18) Instructions 6 to 10, inclusively.

5.1.5 Drive Rod Seal Assembly and Bearing (A25 and A28)

If oil leaks from ports in housing (A24) it is probable that seal assembly (A25) is excessively worn. Such a condition may also indicate that drive rod bush (A28) should be replaced.

To inspect and service, proceed as follows:

1. Drain oil from bearing housing by removing filler cap (D08) and drain plug (D13).
2. Remove air pump components in accordance with Section 5.1.3 Actuator Seal (A18) Instructions 1 and 2, and Section 5.1.4 Actuator Neck Seal (A21) Instructions 2 and 3.
3. Being careful not to damage the flat sealing faces of housing (A24), carefully withdraw housing complete with its bearing and sealing components from bearing housing (D06) and drive rod (D37).
4. Examine condition of lip and distributor seals together with bearing. If either are worn or damaged, we recommend that a new housing (Part No. 0010905000) complete with seal assembly and bearing (A28) should be ordered and fitted. However, individual components can be renewed in accordance with the following instructions.
5. To replace drive rod bearing (A28) carefully remove circlip (A26) allowing seal components to be pushed from housing with blunt punch or drift from bearing end. The drive rod bearing can now be removed using bearing drift (Part No. 0015168000) and the new component pressed into position so that one face is flush with the end of the housing.

6. Ensure that seal components are assembled in accordance with the following instructions.

   a) The wiper seal (A34) is first assembled to the drive rod seal carrier (A32) using wiper seal insertion tool (Part No. 0010103000) ensuring the correct orientation.

   b) Then the internal distributor seal (A33) is offered up to the bearing and seal housing (A24) ensuring again the correct orientation and pushed into place with the drive rod seal carrier (Part No 0015195000) (together with wiper seal (A34)) and the whole pressed into place with the wiper seal insertion tool (Part No. 0010103000). Care must be exercised when replacing circlip (A26) to ensure that the lip of the wiper seal (A34) is not damaged by the hand tools used. See Section 6.4.

7. Before replacing bearing/seal housing assembly, check condition of drive rod, particularly if new bush (A28) has been fitted. If surface is significantly worn, the drive rod should be replaced in accordance with instructions given in Section 5.4.2.

8. Assembly tool (Part No. 0015101000) must be used when replacing bearing/ seal housing assembly to ensure that the wiping edges of the seal assembly (A25) are not damaged. The drive rod must be smeared with clean oil to assist this procedure. See Section 6.5. Gasket (A27) must be renewed, always use a component supplied by Selwood Pumps. Ensure that ports in housing (A24) are in the 3 and 9 o'clock positions.

9. Reassemble remaining pump components in accordance with Section 5.1.4 Actuator Neck Seal (A21) Instruction 4 and Section 5.1.3 Actuator Seal (A18) Instructions 6 to 10, inclusively.

10. Replace drain plug (D13) together with sealing washer (D14) and refill bearing housing (D06) with clean oil to level of plug (D08) and replace plug together with 'O' ring (D07). Refer to Section 3.1 Pump Lubrication for details of the oil required for the Bearing Housing.

5.2 Separator Maintenance

5.2.1 Float (B11)

If water in significant quantities continuously passes through the exhaust valve (A07) of the air pump, it is probable that the float (B11) is in need of replacement.

To inspect and service, proceed as follows:

1. Disconnect air hose (A01) by loosening hose clip (A02)

2. Remove nuts (A11) and washers (A12) and lift off separator cap (B01) complete with peel valve/upper diffuser assembly, (B01) to (B21) inclusively. Examine condition of float (B11) and replace with new component if punctured or significantly worn.

3. Check condition of peel valve rubber (B21) and bush (B07) replacing them, if necessary, in accordance with advice commencing at Section 5.2.2 Peel Valve (B21).

4. Also check for deposits of solids likely to interfere with the smooth working of the float system.

5. When fitting a new float, ensure that it is securely tightened against nut (B12). During this procedure, the float should be positioned on the rod so that the operating plate (B15) with its associated peel valve fasteners is just clear of the central clamp-bar screws (B16), when the float is located in the upper-diffuser cone.

6. If all components are seen to be in satisfactory condition, replace separator cap assembly, washers (A12) and nuts (A11). Alternately tighten each nut a small amount to ensure that the cap is pulled down evenly. Do NOT over tighten. Replace air hose and re-tension hose clip (A02).

5.2.2 Peel Valve (B21)

If significant quantities of water are discharged from the exhaust valve (A07) of the air pump, and the float (B11) is in satisfactory condition, it is probable that a fault exists in the peel valve assembly.

To inspect and service, proceed as follows:

1. Remove separator cap sub-assembly (B01) to (B21) and unscrew float (B11) and nut (B12).

2. Release screws (B09) and spring washers (B10) to allow upper-diffuser/valve assembly to be withdrawn.

3. Remove screws (B04) and sealing washers (B05) to allow upper diffuser (B06) to be removed from the port plate sub-assembly.

4. Examine condition of peel valve rubber (B21) and air ports in plate (B03) which it should completely cover when the float is fully raised. If the rubber does not seat correctly, is distorted, or in any way damaged, it must be removed and discarded by releasing screws (B16).

5. To fit new peel valve rubber (B21), carefully clean existing parts thoroughly, especially surfaces of port plate (B03), and clamp bars (B19), and position new rubber on plate. Assemble screws (B16), clamp bar (B19), clamp bar seal (B20), washer (B18) and nuts (B17) in sequence shown on drawing. Alternately tighten each nut a small amount to ensure that even clamping pressure is produced. Correctly tightened nuts will not cause the clamp bar to distort the rubber.

6. Carefully attach the ends of the valve rubber (B21) to the operating plate (B15), noting that the components and method of assembly are identical to those described in Section 5.2.2 Peel Valve (B21) Instruction 5, except that clamp bar seal (B20) is omitted. Again, ensure that the nuts are not over-tightened.

7. After completing Section 5.2.2 Peel Valve (B21) Instructions 5 and 6, check that the peel valve rubber is capable of closing all of the air holes in port plate (B03) when operating rod (B13) is square to the plate and fully lifted.
8. Check condition of bush (B07) in upper diffuser B06) and replace, together with clip (B08) and Nitrile washer (B35) if significantly worn.

NOTE: The operating rod (B13) is normally a slack fit in the bush.

9. Position port plate sub-assembly on upper diffuser (B06), fit washers (B05) after checking that they will seal efficiently and fully tighten screws (B04). Reassemble nut (B12) and screw float (B11) on to operating rod and tighten securely in accordance with Section 5.2.1 Float (B11) Instruction 5.
10. Recheck operation of peel valve rubber (B21) to ensure that it fully covers air ports in plate (B03) when the float is located in the upper-diffuser cone. In this position there should be a gap of 3-5 mm between the heads of the centre clamp bar screws (B16) and the operating plate (B15). Adjust the position of the float on the operating rod to obtain the correct dimension.
11. Examine condition of gasket (B02) and renew, if necessary, before installing between port plate (B03) and separator cap (B01). Fit spring washers (A12) and screws (A11) each of which should be sequentially turned a small amount until fully tightened. Gasket (B02) must be evenly compressed.
12. Replace separator cap sub-assembly in accordance with Section 5.2.1 Float (B11) Instruction 6.

5.2.3 Deposits of Solids[†‡]

When handling liquids containing solids capable of adhering to product wetted surfaces, it is advisable periodically to check the valve system in the separator.

To inspect and service, proceed as follows:

1. Remove separator cap sub-assembly in accordance with Section 5.2.1 Float (B11) Instructions 1, 2 and 3, allowing separator body (B22) together with lower diffuser (B24), to be lifted off the suction tube (B27).
2. Remove any deposits of scale from lower diffuser (B24) and check condition of welds securing its circular bottom to the perforated cylinder. Remove any solids that may have accumulated in the suction tube (B27), renew gasket (B25) and reposition separator-body/lower-diffuser assembly on suction tube.
3. Remove deposited materials from surfaces of upper diffuser (B06) and note, in particular, the condition of welds securing cone and disc to perforated diffuser body. Also examine diffuser bush (B07) and operating rod (B13), and replace if significantly worn in accordance with Section 5.2.2 Peel Valve (B21) Instructions 3 to 11. Remove all deposited solids that would interfere with the free movement of the mechanism, obstruct the passage of air across the port plate holes, or inhibit the flow of water (through the holes in the upper diffuser, for example).
4. Once it is established that all components are in a satisfactory condition and are free from scale, replace separator cap sub-assembly in accordance with Section 5.2.1 Float (B11) Instruction 6. Any re-assembly work carried out on the peel valve assembly should be in accordance with Section 5.2.2 Peel Valve (B21) commencing at Instruction 1.

5.3 Impeller, Mechanical Seal and Delivery Valve Maintenance

5.3.1 Impeller (C04)

Generally speaking, it is only necessary to remove the impeller if the existing component has become severely abraded, or if access to other rotating parts is required.

To remove and replace, proceed as follows:

1. Remove air hose item (A01) from separator cap (B01), after loosening hose clip (A02).
2. Remove nuts (A11) and washers (A12), and lift off separator cap (B01) complete with peel valve/upper diffuser assembly, (B01) to (B21) inclusively.
3. Lift separator body (B22) complete with lower diffuser (B24) off suction tube (B27) allowing (dome) nuts (B29) and spring washers (B30) to be released.
4. Withdraw suction tube (B27) and gasket (B28) after removing nuts (B29) and associated spring washers (B30).
5. Drain oil from flushing chamber by removing filler cap assembly (D08) and drain plug (D34). The condition of the oil will indicate whether or not the mechanical seal has been functioning correctly. If contamination is evident, the mechanical seal must be replaced in accordance with Section 5.3.2 Mechanical Seal (C08) commencing at Instruction 1.
6. Remove impeller screw (C01) and washers (C02) and (C03), and withdraw impeller (C04) from drive shaft (D17). To remove the screw, it will be necessary to lock the impeller by means of a wooden block wedged between the impeller blades and pump body (C09).

NOTE: An impeller removal tool (Part No. 0015WRS781) is available to facilitate removal of the impeller - see Section 6.10.

[†] Use lower Diffuser (Part No. 0015038100) for sludge handling duties. This is recognised by holes in the base as well as around the side.
[‡] Use lower Diffuser (Part No. 0015038000) for other applications where no solids are present which can adhere to the internal surfaces.

7. Removal of the impeller will allow the mechanical seal spring to expand. Do NOT touch the shaft sleeve (C06) or spring if the mechanical seal has been functioning correctly and only the impeller is to be replaced. Premature failure of the mechanical seal assembly could result if the seal's faces are disturbed by moving the shaft sleeve.
8. When fitting a new impeller, ensure that key (C05) is not a tight fit in the impeller keyway. If necessary, remove very small amounts of metal from the sides of the key to achieve a close sliding fit that will not allow any perceptible rotation of the impeller on the shaft, and yet allow the impeller to slide into place by hand. Apply Rustilo 431 grease (or approved equivalent) to all impeller mounting surfaces.
9. Check condition of nylon patch on impeller screw (C01). It is essential that this screw should be stiff to turn in the thread of the shaft. On no account use a screw that moves freely. Use a new screw if the head of the original component is abraded or if the screw is not a friction fit in the shaft thread. Do NOT lubricate these threads.
10. Ensuring that the mechanical seal spring is in position, replace impeller (C04), washer (C03) two washers (C02) with concave faces towards impeller and impeller screw (C01), and tension screw to 60lb ft (8.3kgf m) torque. It is essential that this screw is correctly tensioned. During this operation, it will be necessary to lock the impeller by means of a wooden block wedged between the impeller blades and pump body (C09). Remove block after use.
11. Use Rustilo 431 on the inside of the pump register. Fit new gasket (B28), position suction tube on studs, fit washers (B30) and fully tighten nuts (B29).
12. Renew gasket (B25), reposition separator body sub-assembly on suction tube, and fit separator cap assembly. Assemble washers (A12) and nuts (A11) and alternatively tighten each nut a small amount to ensure that the cap is pulled down evenly. Do NOT over-tighten.
13. Reposition air hose (A01) on spigot of separator cap (B01) and tighten hose clip (A02).
14. Replace drain plug (D34) using PTFE tape as a sealant, and fill flushing chamber with new oil to level of plug. Replace plug and 'O' ring (D08) and (D07). Refer to Section 3.1 Pump Lubrication for details of the oil required for the flushing chamber.

5.3.2 Mechanical Seal (C08)

The mechanical seal should be replaced if the flushing chamber oil continuously leaks into the pumped fluid, or if the oil becomes contaminated with the product. This latter condition is sometimes indicated by leakage of fluid out of a breather cap (D12). Under extreme conditions, pumped fluid may be seen escaping out of the vent at the bottom of flushing chamber (D33).

In the event of abrasive materials being detected in the oil, it is likely that lip seal (D04) will have become worn and necessitate replacement in accordance with Section 5.4.3 Bearings and Lip Seal (D15, D18 and D04).

Daily checks on oil condition should ensure that seal failure is detected before damage occurs to related components. If the mechanical seal leaks, proceed as follows:

1. Drain oil from flushing chamber (D33) by removing its filler cap (D08) and drain plug (D34).
2. Remove impeller (C04) in accordance with Section 5.3.1 Impeller (C04) Instructions 1 to 7 inclusively, and remove impeller key (C05).
3. Withdraw shaft sleeve (C06) together with rotating mechanical seal parts and spring. It is likely that (C07) will be withdrawn with the sleeve remove it and check condition. Replace 'O' ring if unsuitable for further service.
4. Using seat removal tool (Part No. 0015166000), withdraw mechanical seal stationary seat from its housing in pump body (C09). Also remove the seat's rubber joint ring. (See Section 6.3).
5. The rotating parts of mechanical seal (C08) should now be removed from the shaft sleeve and discarded, taking care not to damage the sleeve's surfaces. This operation should be carried-out by hand using a tool that will not scratch the sleeve.
6. Once removed, examine condition of sleeve and replace with new component if unacceptably corroded or worn.

IMPORTANT ADVICE

New mechanical seal components must be handled with great care. In particular, the seal faces must not be touched by hand and must only come into contact with clean soft paper that is free from abrasive materials. Premature seal failure is likely to occur if this advice is not heeded.

7. Thoroughly clean recess in pump body (C09) and also the surrounding surfaces. Smear lubricant (soft soap or washing-up liquid, but not grease) in recess and also on outside diameter of rubber joint ring. Using several layers of clean soft paper to protect the seating face, press seat into recess by applying even finger-pressure. Make sure that the highly-polished sealing face is on the impeller side of the recess, that the new joint ring has been used, and that the seat is positioned directly against the shoulder at the bottom of the recess.
8. Smear lubricant on drive shaft diameters and 'O' ring (C07). Position 'O' ring on shaft taking care to prevent it contacting the shaft's keyway. If a new shaft sleeve (C06) is being used, ensure that it is capable of sliding freely along the shaft and correctly trapping the 'O' ring in the recess provided.
9. Smear lubricant (soft soap) on outside diameter of shaft sleeve (C06) and inside diameter of rubber drive band. Protect the highly polished face of the seal with several layers of clean soft paper, and slide seal assembly onto sleeve using finger pressure only - USE NO TOOLS. The seal must be positioned so that the carbon face is about 3mm past the non-flanged end of the sleeve.

10. Within a few minutes, to ensure that the lubricant has not set, slide sleeve seal assembly onto shaft (seal face towards stationary seat) and press into working position using only the sleeve's flange. This procedure automatically causes the seal head to slide along the sleeve into its correct working position. Ensure that 'O' ring (C07) is correctly trapped in sleeve recess (C06) and that sleeve abuts against shoulder on shaft.
11. Push mechanical seal spring onto location diameter provided on seal head. Ensure that the spring's coils are correctly supported by the flange of sleeve (C06) and will not become trapped between the flange and the impeller (C04) Refit key (C05) and impeller in accordance with Section 5.3.1 Impeller (C04) Instructions 8 to 10.
12. Replace remaining components in accordance with Section 5.3.1 Impeller (C04) Instructions 11 to 14, inclusively.

5.3.3 Delivery Valve, (C27)

Failure of the pump set to pump under suction lift conditions could be due to a fault in the delivery valve assembly.

To inspect and service, proceed as follows:

1. Ensure that pump has been shutdown and the delivery line has been drained.
2. Release T-bolt (C19), swing locking bar (C22) clear, and remove inspection panel (C24) and gasket (C25). It now becomes possible to lift the valve by hand to expose the valve seat (C16) so allowing foreign matter to be removed. Also undertake a preliminary check of the condition of the valve rubber.
3. If further disassembly is required, remove screws (C29) and washers (A13), allowing clamping bar (C28) and delivery valve (C27) complete with valve plates (C26) and (C30) to be removed.
4. Separate upper and lower valve plates (C26) and (C30) by removing nut (C31), and examine condition of rubber (C27), especially along the hinge line and seating surface. Discard if damaged or mis-shapen.
5. To replace valve seat (C16), remove valve chamber (C18) after releasing nuts (B31) and spring washers (C15).
6. Reassemble components in reverse order, renewing gaskets (C17) and (C25) if necessary. Ensure that the radiused edge of clamping bar (C28) is adjacent to hinge line of valve rubber (C27) and that each screw is tightened a small amount so as to produce an even clamping pressure. Correctly tightened screws will not cause the clamp bar to distort the rubber. Seal screws with Loctite 572.

5.4 Maintenance of Flushing Chamber, Air Pump Mechanism, Drive Coupling, Drive Shaft Bearings and Lip Seal

5.4.1 Flushing Chamber (D33)

Leakage of oil through the vent at the bottom of flushing chamber (D33) could be due to failure of either of the lip seals (D30). If the pumped liquid also leaks through the vent, the mechanical seal (C08) will require to be replaced in addition to its adjacent lip seal (D30).

In any of these events, proceed as follows:

1. Drain oil from flushing chamber and bearing housing by removing filler caps (D08) and drain plugs (D13) and (D34).
2. Remove separator assembly and suction tube (B27) or (B35) in accordance with Section 5.3.1 Impeller (C04) Instructions 1 to 4, inclusively.
3. Remove impeller screws (C01) and washers (C02) and (C03), and withdraw impeller (C04) mechanical seal spring, and shaft sleeve (C06) complete with mechanical seal parts (C08). Handle the sleeve and mechanical seal with great care and store in a safe place, particularly if these parts are to be reused.
4. Remove split guard fitted around flexible coupling, and release all of the coupling's fasteners allowing the rubber tyre to be removed.
5. Attach lifting equipment to bearing housing and pump body in compliance with requirements of Health and Safety at Work Act, 1975.
6. Remove nuts, bolts and washers securing pump to chassis and hoist clear, carefully noting the positions of any shims between pump feet and chassis.
7. Lower unit onto working surface and, in compliance with Health and Safety at Work Act, 1975, tip pump onto ends of studs (C10) ensuring that they are suitably protected from damage.
8. Remove nuts (A11) and spring washers (A12) and carefully separate bearing housing and flushing chamber assembly from pump body (C09). During this operation, be very careful not to damage the mechanical seal stationary seat by allowing it to contact the shaft.
9. It now becomes possible to remove flushing chamber (D33) from bearing housing (D06), after releasing screws (D31) and spring washers (A06).
10. To replace lip seals (D30),
    a) Press failed components out of housings and discard.
    b) Thoroughly clean all surfaces of flushing chamber (D33) and press new seals into position, ensuring that they face in the correct directions: The garter spring fitted to the lip of the seal nearest the bearing housing, should

be visible from the bearing housing side of the flushing chamber. The garter spring fitted to the lip of the seal nearest the impeller, should be visible from the impeller side of the flushing chamber. Refer to Section 6.8 for disposition of seals.

11. Replacement of the flushing chamber sub-assembly in the bearing housing must be undertaken very carefully to ensure that the lips of seals (D30) are not damaged by the shoulders on the drive shaft (D17). Use assembly tool (Part No. 0010165100) for this purpose. A generous quantity of oil should be applied to the shaft to assist this operation, and a new gasket (C13) should be fitted. Replace and tighten screws (D31) and spring washers (A06).
12. Position new gasket (C13) on studs (C14) and fit bearing housing assembly to pump body, taking great care to ensure that the shaft does not touch the mechanical seal stationary seat. Replace and tighten nuts (A11) and spring washers (A12).
13. Using lifting equipment in compliance with the Health and Safety at Work Act, 1975, position pump unit on chassis.
14. Refer to Section 1.5 when refitting the pump to a diesel engine. Refer to Section 1.7 when refitting the pump to an electric motor.
15. Replace split guards around flexible coupling and ensure that it is securely fastened, with nuts bolts and washers. Also fasten to flywheel guard where applicable with bolts and washers.
16. Read Section 5.3.2 Mechanical Seal (C08) Instructions 7 to 12, and carefully remove any foreign matter from the sleeve and mechanical seal components. Smear clean oil on both the 'O' ring (C07) and the drive shaft diameters. Position the 'O' ring on the shaft taking care to prevent it contacting the drive shaft's keyway, and slide the sleeve/seal assembly onto shaft (carbon face towards stationary seat) and press into working position using only the sleeve's flange. Ensure that 'O' ring is correctly trapped in sleeve recess.
17. Replace impeller, suction tube and separator components in accordance with Section 5.3.1 Impeller (C04) Instructions 8 to 13, inclusively.
18. Replace bearing/seal housing assembly and actuator neck seal in accordance with Section 5.1.5 Drive Rod Seal Assembly and Bearing (A25 and A28) Instruction 8 and Section 5.1.4 Actuator Neck Seal (A21) Instruction 4.
19. Replace remaining air pump components in accordance with Section 5.1.3 Actuator Seal (A18) Instructions 6 and 10, inclusively.
20. Replace drain plug (D34) using PTFE tape as sealant and fill flushing chamber with new oil to level of plug hole. Replace plug (D08) with 'O' ring (D07). Refer to Section 3.1 Pump Lubrication for details of the oil required for the flushing chamber.
21. Repeat this procedure for bearing housing ensuring that level plug (D08) with 'O' ring (D07) are replaced after the correct oil level is attained.

5.4.2 Air Pump Mechanism

Should actuator (A20) fail to reciprocate when the pump is running, or if other abnormal conditions are suspected, the air pump mechanism should be immediately inspected to minimise the risk of consequential damage.

Proceed as follows:

1. Drain oil from bearing housing and flushing chamber by removing filler caps (D08) with 'O' ring (D07) and drain plugs (D13) with sealing washer (D14) and (D34).
2. Remove air pump components in accordance with Section 5.1.3 Actuator Seal (A18) Instructions 1 and 2, and Section 5.1.4 Actuator Neck Seal (A21) Instructions 2 and 3 (discard actuator neck seal if it has failed).
3. Being careful not to damage the flat sealing faces of housing (A24) carefully withdraw housing complete with bearing and sealing components from bearing housing (D06) and drive rod (D37).
4. Carry out Section 5.3.1 Impeller (C04) Instructions 2 to 4, inclusively.
5. Carry out Section 5.4.1 Flushing Chamber (D33) Instructions 3 to 9, inclusively.
6. Release nut (D38) and withdraw screw (D27), allowing fulcrum pin (D28) to be removed. Drive rod (D37) and connecting rod (D26) may then be withdrawn.
7. Remove circlip (D24). Eccentric (D23) can now be removed by inserting M10 bolt in tapped hole provided and tapping to loosen in an anti-clockwise direction (eccentric has a right hand thread). See Section 6.9. Next, spacer (D19) can be slipped off drive shaft (D17) and inspected.
8. Examine condition of all components and renew failed or significantly worn items. A replacement connecting rod, complete with bushes, should be ordered against sub-assembly (Part No. 0015908000).
9. To rebuild mechanism, ensure thread and abutting spacer (D19) is thoroughly clean and simply screw on the eccentric, making sure it abuts against the spacer (D19) which in turn abuts shaft (D17) shoulder.
10. Position connecting rod (D26) on eccentric, thoroughly de-grease tapping in drive rod (D37) and assemble drive rod and fulcrum pin (D28) in connecting rod.
11. Assemble lock nut (D38) to new screw (D27) locating groove in fulcrum pin (D28). Do NOT re-use old component. Fully tighten unit against recess in drive rod(s) (D37) to 2.9kgf m (21lb ft) torque.
12. Replace flushing chamber and pump on chassis in accordance with Section 5.4.1 Flushing Chamber (D33) Instructions 11 to 17 inclusive.

NOTE: It will be necessary to start at 5.4.1 Flushing Chamber (D33) Instruction 10, if lip seals (D30) have to be replaced.

13. Read Section 5.3.2 Mechanical Seal (C08) Instruction 7 and carefully remove any foreign matter from the sleeve and mechanical seal components. Smear clean oil on both the 'O' ring (C07) and the drive shaft diameters. Position the 'O' ring on the shaft taking care to prevent it contacting the drive shaft's keyway, and slide the sleeve/seal assembly onto shaft (carbon face towards stationary seat) and press into working position using only the sleeve's flange. Ensure that 'O' ring is correctly trapped in sleeve recess.
14. Replace impeller, suction tube and separator components in accordance with Section 5.3.1 Impeller (C04) Instructions 8 to 13, inclusively.
15. Replace bearing/seal housing assembly and actuator neck seal in accordance with Section 5.1.5 Drive Rod Seal Assembly and Bearing (A25 and A28) Instruction 8 and Section 5.1.4 Actuator Neck Seal (A21) Instruction 4.
16. Replace remaining air pump components in accordance with Section 5.1.3 Actuator Seal (A18) Instructions 6 to 10, inclusively.
17. Replace drain plug (D34) using PTFE tape as sealant and fill flushing chamber with new oil to level of plug (D08). Replace plug and 'O' ring (D07). Refer to Section 3.1 Pump Lubrication for details of the oil required for the flushing chamber.
18. Repeat this procedure for bearing housing ensuring that level plug (D08) and 'O' ring (D07) are replaced after the correct oil level is attained.

5.4.3 Bearings and Lip Seal (D15, D18 and D04)

In the unlikely event of a bearing failure, or if the bearing housing oil escapes from the engine end of the bearing housing by passing across lip seal (D04), it becomes necessary to undertake work on the drive shaft assembly.

1. To replace lip seal (D04) only proceed as follows:
    a) Remove oil from bearing housing by removing the filler cap (D08) and drain plug (D13).
    b) Remove lip seal carrier (D03) lip seal (D04) and 'O' ring (D05) by removing cap screws (D01) and washers (A06).
    c) Prise out the old lip seal and press in a new seal. When fitting lightly lubricate the lips of the seal and if damaged replace 'O' ring (D05).
    d) Refit the components taking care not to damage the lip seal on the sharp edges of the keyway.
    e) Replace drain plug (D13) and sealing washer (D14) in bearing housing (D06). Fill with oil to correct level and replace level plug (D08) and O-ring (D07).
2. For bearing replacement proceed as follows:
    a) Carry out Section 5.4.2 Air Pump Mechanism Instructions 1 to 8, inclusively.
    b) Remove lipseal carrier (D03) lipseal (D04) and 'O' ring (D05) by removing capscrews (D01) and washers (A06). If lipseal (D04) is to be utilised again ensure seal is not dragged over sharp edge of keyway.
    c) Moving to the impeller end of the bearing housing (D06) remove bearing carrier (D20) by removing setscrews (D22) and washers (A13). The bearing carrier (D20) can be jacked free by the two screwed holes adjacent to the fixings.
    d) Remove drive shaft (D17) complete with bearings (D18) and (D15) from bearing housing (D06) by applying pressure (preferably with a fly-press) to the protected coupling end of the drive shaft.
    e) Press bearings (D15) and (D18) from shaft (D17) and discard. Thoroughly clean all bearing housing surfaces and inspect shaft (D17) for damage.
    f) To fit new bearings, thoroughly clean all drive shaft surfaces and smear oil on bearing mounting diameters. Press new bearings onto shaft using workshop tools and method described Sections 6.11 and 6.12, taking care to ensure that:
        i) The bearings are kept in their as-received condition and do NOT come into contact with foreign matter.
        ii) Pressure during fitting is applied directly to the inner rings of the bearings and not to the outer rings.
        iii) The bearings are square to the shaft throughout the fitting procedure.
        iv) When fitted, the bearings register against the shaft shoulders.

NOTE: Use of the workshop tools will ensure the above criteria is fulfilled.

    g) Before replacing the drive shaft sub-assembly into the bearing housing, make sure that the bores that receive the bearings are clean and smeared with clean engine oil. Care must be exercised when passing the drive shaft with bearings into the bearing housing to ensure it is concentric and parallel to the mating surfaces. This is described in Section 6.13.
    h) The sub-assembly should be pressed into position by 'jacking' home the bearing carrier (D20) by means of the setscrews (D22) - do not apply shock loads such as hammer blows.

NOTE: 'Jack' home evenly - protect surface of bearing carrier (D20) with plain washers under setscrews (D22) finally remove setscrews (D22) and fit new washers (A13).

    i) The remaining components may now be reassembled in accordance with Section 5.4.2 Air Pump Mechanism Instructions 9 and 18, inclusively.

5.5 Chassis Maintenance

It is possible to work on individual components of the chassis without removing either the engine or the pump unit. In all cases work should be undertaken on level ground and care should be exercised to ensure that the pump set is fully immobilised. If the chassis is to be completely dismantled, both the engine and pump unit should be removed in compliance with the requirements of Health and Safety at Work Act, 1975.

1. To remove the fuel tank:
   a) Drain the fuel by removing the drain plug and washer.
   b) Disconnect the fuel feed and return lines.
   c) Place suitable supports beneath the tank and remove the four nuts bolts and washers, access to the nuts and washers being inside the main chassis members.
   d) The tank can then be slid from beneath the chassis, taking care not to lose the steel spacers if fitted.
2. To clean the fuel feed filter:
   a) Remove the three set bolts and washers.
   b) Lift the filter from the tank, taking care not to lose the gasket.

NOTE: The filter can be removed for cleaning without removing the tank from the chassis.

3. To remove the front axle:
   a) Support the chassis beneath either the fuel tank ensuring that the weight is taken on a suitable piece of wood extending the full width of the tank, or underneath the main chassis members.
   b) Remove the split pins and washers retaining the wheels and slide the wheels from the axle.
   c) Remove the split pin and washer from one side only of the draw bar pivot pin and slide the pin free of the pivot and draw bar thus allowing the draw bar to come away from the assembly.
   d) Remove the split pin and washer from one end of the axle pivot pin and slide the pin clear of the pivot and axle. The axle will now be free.
4. The front axle pivot locking system is designed as a backup to the single bolt fixing. To remove pivot:
   a) Bend back lock washer and release the set bolt, lock washer and pivot topcap.
   b) Drop the pivot clear of the chassis member. Note that if the engine is in place on the chassis the access to the set bolt is from beneath the engine between the chassis members.
   c) Extract and replace the spring roll pin if damaged, from top of pivot.
5. To remove the rear axle:
   a) Support the chassis and remove the wheels as described in paragraph 5.3.
   b) Release the four horizontally disposed nuts, bolts, and spring washers, and the two vertical nuts, bolts, spring and taper washers.
6. To remove the lifting eye remove the four set bolts and spring washers.
7. Reassembly is a reverse of the above, ensuring that the wheel hubs, axles, pivot, pivot turntable, axle pivot pin and drawbar pin are thoroughly cleaned and liberally greased. Renew the fuel feed filter gasket if necessary.

NOTE: When placing pivot top cap on top of pivot ensure the top cap locates correctly over the spring roll pin in top of pivot shaft. Also when placing the lock washer with fixing bolt in place over the pivot top cap, ensure small tab locates in second hole of the pivot top cap - the first hole locating the spring roll pin. Always use a new lock washer. Finally bending up in one place to lock against the flat of the setbolt hexagon.

5.6 Supersilent Canopy - Canopy Removal

To remove the canopy proceed as follows:

1. Disconnect the battery positive and negative and remove the battery assembly.
2. Disconnect exhaust pipework within canopy having first removed insulation blanket.
3. Disconnect emergency stop wiring plugs from stop buttons from within canopy. Tie up onto engine to prevent damage to wiring.
4. Remove suction and discharge aperture cover plates. Remove foam plugs and rubber blanking gasket.
5. Remove discharge fitting and extension piece from discharge flange of pump.
6. In each corner of the skid, working up through the upper flange of the skid base are four M16 screws. Remove these in turn to release the canopy from the corners of the skid base.
7. With the corners released undo the M24 nyloc nuts from the centre lifting studs. The studs are locked internally and will not turn beyond a few degrees of movement. When these are both released the canopy is ready to be lifted clear.
8. In order to prevent damage to the engine radiator and to ensure a clean lift is achieved a pair of M12 eye bolts will be required to be fitted to the roof section on the radiator end of the canopy. The mounting positions are blanked off with normal hex head screws at present, remove these and replace with eye bolts.
9. Use a set of three or four leg chains. Attach two to the centre lifting eye and snag the other two to shorten them so that they pick up the radiator end of the canopy square. Lift the canopy up and away from the unit, place down on timber runners to protect the lower edge.

5.7 Supersilent Canopy -Fuel Tank Removal

To remove the fuel tank proceed as follows:

1. With the canopy removed it will now be necessary to remove the pump and engine from the tank structure. Begin by removing the coupling guards from the engine bell housing.
2. Disconnect the air pump silencer hose from the discharge elbow of the air pump. Remove the clamps holding silencer body. Remove the air pump silencer assembly complete.
3. Slacken and remove the four M16 fixings holding the pump body. Attach a suitable lifting device to the pump and manually draw the pump backwards off the coupling pins. When the pins are clear of the rubber element lift the pump unit clear of the chassis.
4. To remove the engine the following parts will need to be removed from the tank/skid structure and where necessary tied back to the engine to prevent damage. Disconnect and drain fuel lines. Undo and remove control panel from bracket. Working beneath the engine end of the skid slacken the bulkhead fitting lock nut on the oil drain hose and remove the hose end from the skid base. Tie the hose back to a suitable point on the engine.
5. The last fixings to be removed are engine mount to AV mount securing screws. Slacken and remove each in turn.
6. The engine is now ready to be removed from the tank structure. Lift vertically up and away. Watch for any danger of collision between engine and tank. The engine will need to be placed in a suitable frame to prevent damage to the oil drain or sump.
7. To remove the tank, slacken and remove four tank to AV mount screws. With these removed use a set of four chains to lift the tank unit from the skid base using the four AV mount brackets.

5.8 Supersilent Canopy – Fuel Tank Refitting

To refit the fuel tank proceed as follows:

1. Refit the tank as per removal taking note of the fuel drain plug position and its relationship to the access plug in the skid base. Orientate the tank so that the drain is behind the larger plug.
2. Insert the four screws to secure the tank to the AV mounts and check the alignment of the tank in the skid base before tightening these screws. During the tightening procedure a twisting moment can be applied to the rubber element of the mount which is undesirable. If this occurs, use or make a suitable tool to counteract this twist and tighten to 150 Nm. Recheck alignment and ensure no mounts are twisted. Correct if required.
3. Refit engine but do not fully tighten the mounting to the AV mount screws at this stage, finger tighten only. Reconnect all fuel lines, oil drain and refit the control panel.
4. Before refitting the pump unit slacken the grub screw (hex socket set screw) in the pump half coupling boss. Ensure that the hub and rubber element are free to slide on the pump shaft. This will be used as a guide for checking the alignment of the coupling at a later stage. Leave the coupling hub loose on the shaft.
5. Lift the pump end onto the chassis and push the unit onto the engine side coupling drive pins. With the coupling halves engaged drop in the four pump mounting fasteners and tighten nuts, finger tighten only.
6. The pump should now be visually aligned and tighten down to 150 Nm torque. Check that the coupling element and hub is free to move on the shaft to confirm correct alignment. A pry bar can be used, but it should not require any effort to move the assembly.
7. Move the engine on its mountings to make alignment adjustments. Any shimming to adjust vertical height should be added under the engine AV mounts.
8. When alignment is satisfactory gradually tighten the four AV mount screws to 70 Nm, checking element /hub movement on the shaft each time. During this procedure it is possible for the AV mount rubber to twist. To prevent this use a suitable tool to counteract the applied torque on the mount. This will maintain the mount in a neutral condition.
9. When complete tighten grub screw in the coupling hub into position on the pump shaft. The element should not be fitted against the flywheel adaptor plate but clearance should be present to prevent end thrust transmission through the coupling element.

5.9 Supersilent Canopy – Canopy Refitting

To refit the canopy proceed as follows:

1. Re-sling the canopy as for removal and lift into position. Take care not to damage the radiator when positioning. Lower onto skid base checking for alignment of the lifting studs.
2. When down and before fitting any fixings check that the radiator overflow pipe is not trapped by the canopy bulkhead. Release if trapped.
3. Refit canopy lifting stud nuts and four corner fixing screws. Adjust alignment if necessary and tighten corner screws then stud nuts.
4. Remove eye bolts from canopy roof and replace with fasteners to prevent water ingress.
5. Refit the delivery extension and fittings and refit the suction and discharge covers as the reverse of removal.

6. Reconnect the exhaust extension and refit insulating cover.
7. Refit the fuel lines and control panel.
8. Refit the air pump exhaust silencer assembly.
9. Reconnect the emergency stop wiring and refit the battery assembly and coupling guards.
10. Fill with fuel and bleed the system as required. Test run. Inspect all fasteners after 50 hours of running.

6 WORKSHOP TOOLS

Major Servicing will always be carried-out more quickly by the use of the following special tools and procedure. More importantly, their use will help to ensure that new components are not damaged whilst being fitted.

The tools are simple to employ and have been designed for use in combination with standard fitter's tools. For some operations, a simple press, and a bench complete with a vice will be desirable.

We earnestly advise all pump users to purchase a complete set of tools.

6.1 Care of Servicing Tools

Always clean, oil and safely store tools after use.

Complete sets of tools are available by quoting:

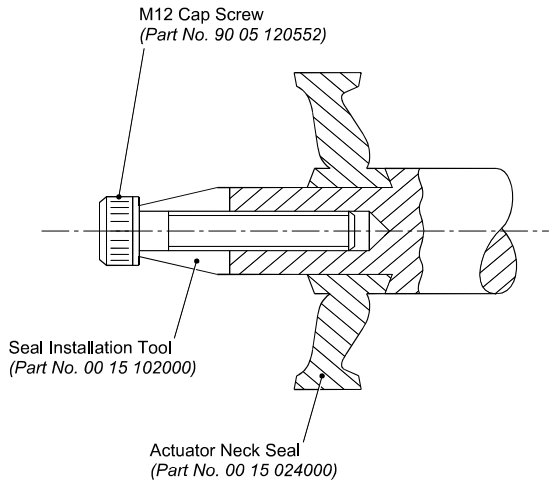
Part No. 0010948200 - Seltorque S100 Excluding Impeller Removal Tool Part No. 0015WRS781

Comprising:

Drive End Bearing Assembly Tool	0015181100	1
Bearing Assembly Stud	0015172100	1
Eccentric Puller Block	0015170000	1
Impeller End Bearing Assy Tube	0015169200	1
Drive Rod Bearing Drift	0015168000	1
Mechanical Seal Seat Removal Tool	0015166000	1
Flushing Chamber Lip Seal Fitting Tool	0015165100	1
Drive Rod Seal Tool	0010103000	1
Actuator Neck Seal Cone	0015102000	1
Drive Rod Installation Tool	0015101000	1

6.2 Fitting of Actuator Neck Seal

1. Lightly clamp seal installation tool against end of drive rod by means of capscrew, as shown.
2. Push seal into rear of inner pump body recess Part No. 0015014000.
3. Clean exposed shaft and tool surfaces, and smear with soft soap. Carefully slide the actuator neck seal onto shaft until it abuts against the conical shoulder.

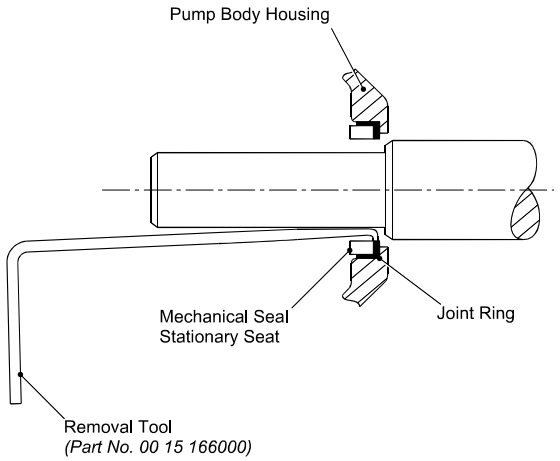


6.3 Removal of Mechanical Seal Stationary Seat and Joint Ring

1. Ensure oil is drained from flushing chamber. Remove impeller and shaft sleeve, complete with rotating mechanical seal components.
2. Engage tip of removal tool on inside face of seat. Remove seat by pulling evenly at several peripheral points.
3. Joint ring can then be collapsed and discarded.
4. To replace, the mechanical seal stationary seat and joint ring must be assembled together with the outer face of the joint ring smeared with soft soap, offered up to the flushing chamber housing and gently pressed home using a piece of wood.

IMPORTANT ADVICE

New Mechanical Seal Components must be handled with great care. In particular, the seal faces must not be touched by hand and must only come into contact with clean soft paper that is free form abrasive materials. Premature seal failure is likely to occur if this advice is not heeded.



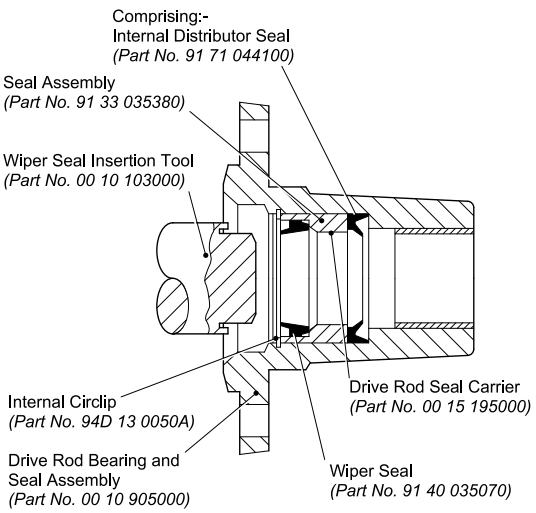
6.4 Removal of Drive Rod Seal Assembly

1. Remove internal circlip with suitable pliers and remove seal assembly by carefully tapping with blunt punch or drift from bush end.
2. Replacement of all components may be aided by smearing adjacent surfaces with soft soap.
3. Prior to sliding home the drive rod seal carrier Part No. 0015195000, wiper seal Part No. 9140035070 **must first** be assembled together, using insertion tool Part No. 0010103000. Carefully applied pressure from a hand press or vice jaws may be employed for this operation.

IMPORTANT ADVICE

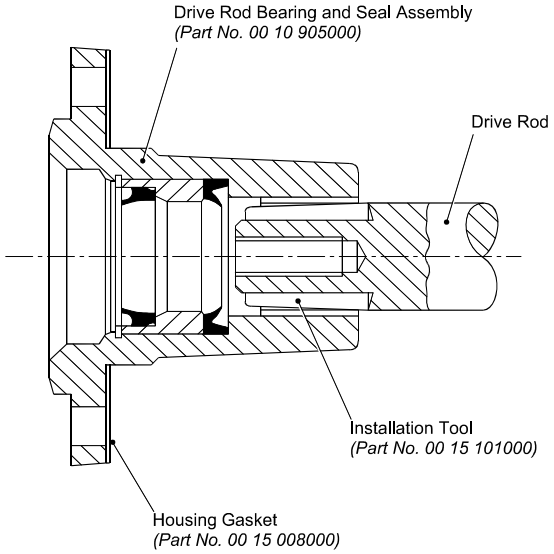
Parts must be assembled in correct order and orientation.

4. Great care must be exercised when replacing the circlip to ensure that the lip of the wiper seal is not damaged by the hand tools used.



6.5 Fit Seal Housing Sub-Assembly to Pump

1. Thoroughly clean exposed drive rod surfaces and position installation tool as shown. Smear tool and drive rod surfaces with oil.
2. Thoroughly lubricate drive rod bearing and drive rod seal with oil and fit new gasket before pushing seal housing assembly along drive rod until it registers in bearing housing.

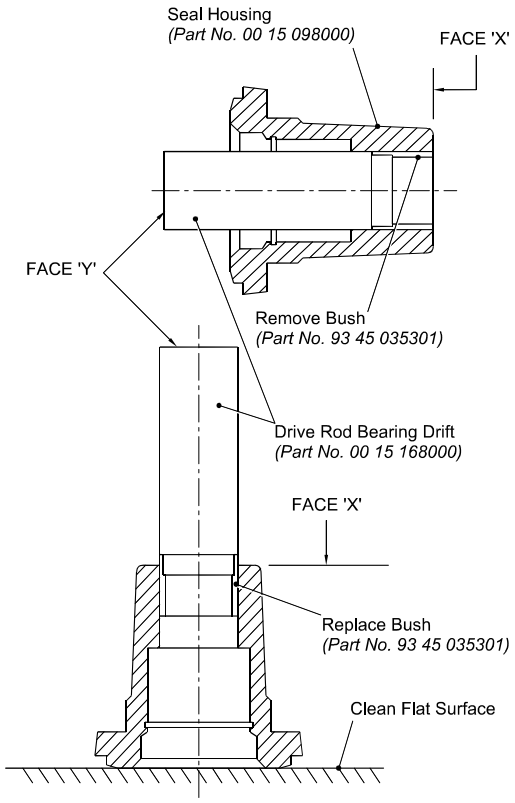


6.6 Remove Drive Rod Bearing Bush

1. Insert shouldered end of drift into bush as shown in upper sketch.
2. Support air pump pedestal evenly on face 'X' leaving sufficient clearance for bush to emerge freely.
3. Push out bearing bush by pressing or striking on tool face 'Y'.

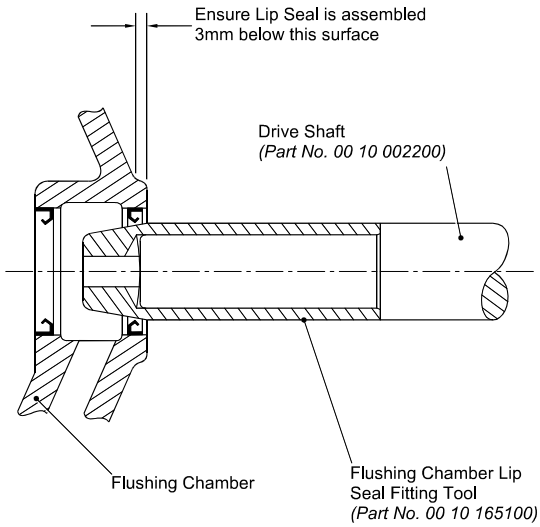
6.7 Fit New Bearing Bush

1. Position seal housing on clean flat surface and register new bush in bore as shown in lower drawing.
2. Lightly oil bore and bush to prevent pick up.
3. Insert shouldered end of drift into bush as shown in lower sketch.
4. Insert bush by pressing or striking on tool face 'Y' until end of bearing is flush with face 'X'.



6.8 Assemble Flushing Chamber

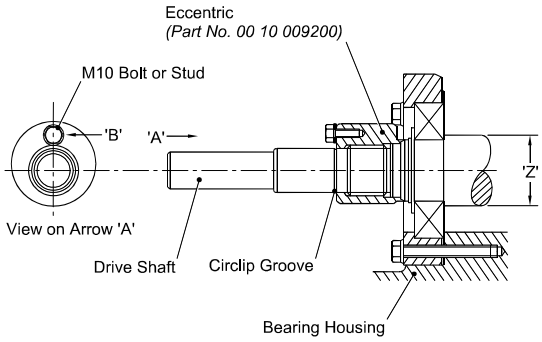
1. Check that circlip has been fitted to eccentric, and thoroughly clean exposed shaft surfaces and smear with oil. Check that lip seal fitting tool is internally and externally clean, smear with oil and slide over end of drive shaft as shown.
2. Check that flushing chamber lip seals are correctly orientated and generously lubricate their lips with oil. Slide chamber along fitting tool and onto drive shaft, taking great care to ensure that it remains concentric to the shafts axis. LIP SEALS MUST NOT BE USED TO SUPPORT THE FLUSHING CHAMBER. Ensure that the lip of the leading seal does not become deformed.



6.9 Remove Eccentric

1. Check that circlip adjacent to eccentric is removed.
2. Insert M10 bolt plus washer into eccentric as shown.
3. To release tap using drift in anticlockwise direction i.e. in direction of arrow 'B'.

NOTE: If removing eccentric when shaft is disassembled from pump, clamp with soft jaws on diameter 'Z'.



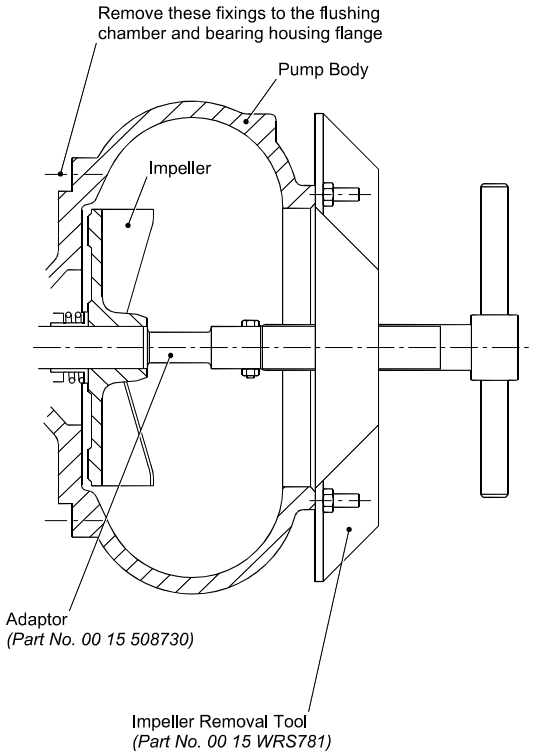
6.10 Remove Impeller

1. Pump should be removed from the chassis or the engine decoupled and the bearing housing supported.
2. Remove suction tube together with separator components ensuring that the gasket between pump body and suction tube is also removed.
3. Remove impeller screw and washers.
4. Remove nuts and washer (8off each) from the studs protruding from the pump body through the flushing chamber and bearing housing flange joint.
5. Offer up impeller removal tool across front face of pump body as shown ensuring the correct nose

adaptor is fitted. Affix by using existing nuts and washers.

6. Turn screw handle so that the drive shaft connected to the bearing housing is pushed through and out of the pump body leaving the impeller free.

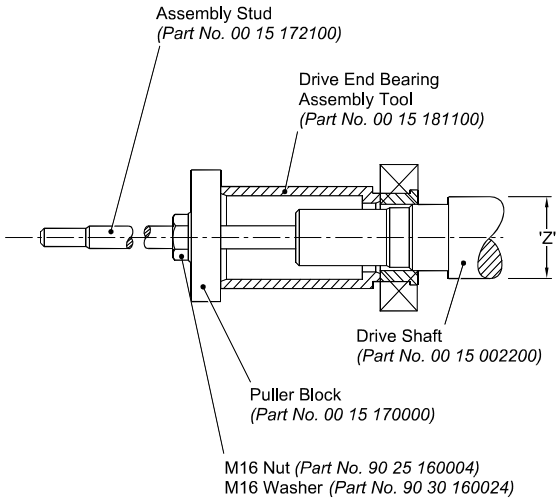
NOTE: When re-assembling impeller ensure end of shaft is coated with Shell ENSIS grease or approved equivalent.


Remove these fixings to the flushing chamber and bearing housing flange
Pump Body
Impeller
Adaptor
(Part No. 00 15 508730)
Impeller Removal Tool
(Part No. 00 15 WRS781)

6.11 Fit Replacement Drive End Bearing

1. Remove old bearing taking care not to damage the shaft in any way. Fit soft jaws to vice and clamp shaft horizontally on diameter 'Z' leaving the abutment shoulder overhanging.
2. Screw assembly stud Part No. 0015172100 into shaft end until it bottoms. Thoroughly clean bearing -mounting surfaces of shaft and smear with oil.
3. Carefully register bearing on shaft, ensuring that it is not contaminated by foreign matter, and position assembly tool Part No. 00151811000 and puller block Part No. 0015170000 as shown.
4. Ensuring that the bearing is square to the shaft and that assembly tool is concentric to the shaft's centre line, push bearing onto shaft by applying steady and continuous screwing torque to the M16 nut and washer.
5. Check that inner ring of bearing is touching abutment shoulder of drive shaft:

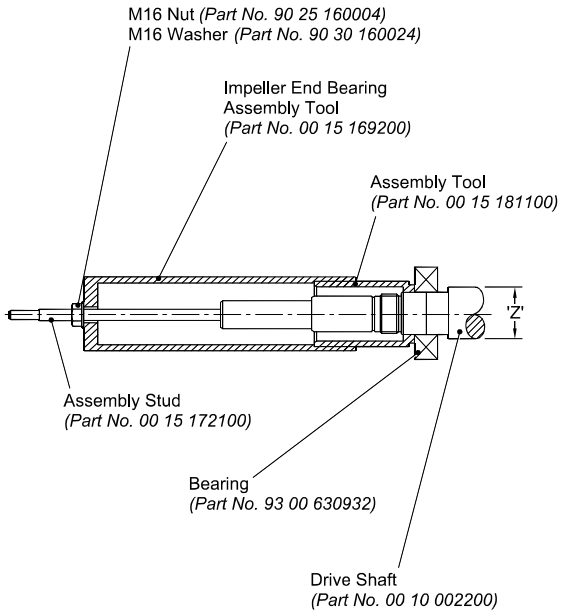
NOTE: Bearings may be replaced by using the assembly tool in conjunction with a press only, thus eliminating stud and puller block.



6.12 Fit Replacement Impeller End Bearing

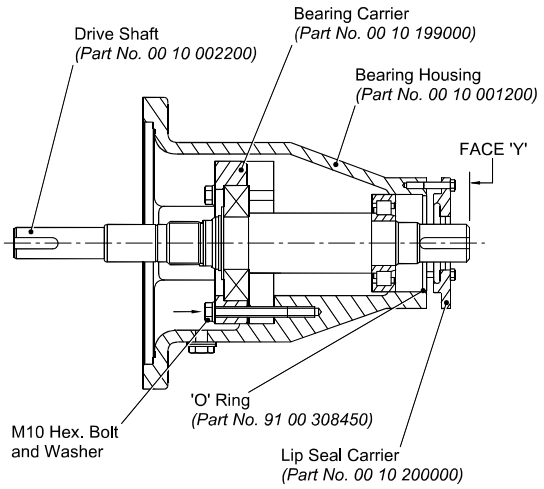
1. Remove old bearing taking care not to damage the shaft in any way. Fit soft jaws to vice and clamp shaft horizontally on diameter 'Z' leaving the abutment shoulder overhanging.
2. Screw assembly stud Part No. 0015172100 into shaft end until it bottoms. Thoroughly clean bearing mounting surfaces of shaft and smear with oil.
3. Carefully register bearing on shaft ensuring that it is **not contaminated by foreign matter** and position assembly tool Part No. 0015169200 and Part No. 0015181100 as shown.
4. Ensuring that the bearing is square to the shaft and that assembly tool is concentric to the shaft centre line, push bearing onto shaft by applying steady and continuous screwing torque to the M16 nut and washer.
5. Check that inner ring of bearing is touching abutment shoulder of drive shaft.
6. Replace the bearing spacer and circlip.

NOTE: Bearings may be replaced by using the assembly tools in conjunction with a press only, thus eliminating stud and puller block.



6.13 Assembly of Drive Shaft with Bearings into Housing

1. Remove assembly by releasing the 4 x M10 fixings. The bearing carrier can be jacked free by the two screwed holes adjacent to the fixings.
2. Remove the lip seal carrier, ensuring seal is not dragged over sharp edge of keyway, together with 'O' ring and press or strike (with soft faced mallet) shaft end 'Y', to withdraw bearings and bearing carrier.
3. When assembling, all parts should be scrupulously clean and bearing mounting surfaces smeared with oil.
4. The outer race of the drive end bearing is inserted by carefully drifting or pressing the race into the housing. Alternatively, the Lip Seal Carrier Part No. 0010200000 may be utilised, pressing the race into the housing by making use of longer bolts and jacking home evenly. If this latter method is employed be sure to use large washers beneath the bolt head to distribute pressure over a larger area as the lipseal carrier may be manufactured in light alloy.
5. Position bearing housing in vertical attitude with bell end upwards mounted on suitable supports so that end of shaft can emerge through bottom.
6. Ensure shaft with bearings is inserted into the bearing housing so that it is concentric and parallel to the mating surfaces. Assembly is 'jacked' home by tightening the M10 fixings assembled together with the bearing carrier.
7. Finally ensure lip seal is in good condition together with 'O' ring before finally bolting up the carrier.



7 FAULT FINDING GUIDE

This table gives the most common symptoms arising in connection with water-handling duties. Please consult Selwood Pumps for further advice if the service fault is not described, and particularly if the duty has uncommon characteristics.

At no time should the pump be run if its bearing housing or flushing chamber contains contaminated oil. Very small volumes of oil may be lost from these chambers during a day's normal running, but remedial action should immediately be taken if the loss becomes excessive.

The most likely causes of failure are given in the sequence in which they should be investigated. For example, if the pump will not prime, carry-out the first service instruction that is listed and proceed to the second only if the first proves to be inappropriate.

PUMP WILL NOT PRIME, OR LOSES PRIME HAVING PUMPED PRODUCT FOR A BRIEF PERIOD OF TIME

	ACTION	COMMENT
1	Check that drain taps fitted to volute and air pumps are closed.	Drain taps are sometimes left open overnight. If okay, try Action 2.
2	Remove inspection cover and check that delivery valve is seating efficiently.	The delivery line MUST BE DRAINED before the cover is removed. If okay, try Action 3.
3	Disconnect hose from air pump spigot and attach vacuum gauge to pump - should read 29' H_20 (25.6" Hg) or more, after the pump is stopped.	If vacuum is okay, check Action 4. If vacuum is low or fails quickly, check Action 8.
4	Reconnect air pump hose, and check vacuum at suction spigot of main pump. Correct reading is given above.	If vacuum is okay, check Actions 5 (a) and (b). If vacuum is slow to rise or low at terminal condition, check Actions 6 and 7.
5	(a) Check all suction-side hoses, fittings and joints for air leaks.	Priming problems are VERY often caused by faults in supply pipework. Air must not be allowed to pass into the system across couplings, etc.
	(b) Check strainer and suction hose for blockages.	Do not use non-reinforced hose. Always fit a strainer of correct size and type.
6	Examine separator assembly for air leaks or trapped solids. Check peel valve seat for ice in cold conditions.	Refer to Major Servicing: Section 5.2 for advice. The float must be able to rise and fall freely. The peel valve must completely shut-off the air pump when the float rises to its maximum position.
7	Check level of oil in flushing chamber.	If level is very low, mechanical seal may be admitting air. Top up, and re-check vacuum. Substantial oil loss indicates seal failure - refer to Major Servicing: Section 5.3.2 for advice.
8	Examine valves and flexing seals in air pump assembly and check that castings are not cracked.	Refer to Major Servicing: Section 5.1 for advice.

OUTPUT AND HEAD ARE LESS THAN PUBLISHED FIGURES

	ACTION	COMMENT
1	Check strainer and suction pipework for blockages. Also check that air is not being pulled through a vortex created in the supply reservoir.	Choking of the supply system by solids will increase the flow resistance, thus increasing the head against which the pump has to operate, and so reducing output, The entry of air through faulty pipe joints will have a similar effect. Reduction also occurs if air is entrained through a vortex to eliminate, increase strainer's submergence.
2	Check pump speed with tachometer.	Speed, off-load must not exceed: 1600rpm.
3	Check that delivery valve, discharge branch of casing, and pipework are free from blockages.	Obstructions down-stream of the pump will increase the flow resistance and thus reduce output.
4	Check condition of impeller.	Excessively worn vanes will reduce output. Also check outside diameter of vanes: Standard Seltorque S100 - 215mm

LIQUID IS BEING PUMPED OUT OF AIR PUMP, I.E. WATER CARRY-OVER IS OCCURRING

	ACTION	COMMENT
1	Cheek condition of separator assembly.	No significant amounts of water should normally pass across the air pump. The rubber peel valve may not be seating correctly, the float may be punctured, or not be able to rise and fall freely, etc. Also, check that bush is correctly positioned. Refer to Major Servicing: Section 5.2 for instructions.
2	Check condition of valves and flexing seals in air pump.	On rare occasions, malfunction of the air pump seals In air pump can cause the separator float to move erratically. Refer to major Servicing: Section 5.1 for instructions.

WATER LEAKING OUT OF FLUSHING CHAMBER VENT BEHIND VOLUTE, OR FROM BREATHER VALVE FITTED TO CHAMBER

	ACTION	COMMENT
1	Drain flushing chamber to check contents.	The chamber should only contain oil. If the mechanical seal has failed, water may be present in the chamber. If so, replace seal in accordance with instructions given in Major Servicing: Section 5.3.2.

OIL LEAKING OUT OF FLUSHING CHAMBER VENT BEHIND VOLUTE

	ACTION	COMMENT
1	Top up both oil reservoirs, and run pump under supervision for say 30 min to determine from which reservoir leakage is occurring.	Replace faulty lip seal in accordance with instructions given in Major Servicing: Section 5.4.

OIL LEAKING FROM VENTS BEHIND AIR PUMP

	ACTION	COMMENT
1	Check that mechanism reservoir has not been overfilled with oil.	It is extremely difficult to overfill pumps built to latest specifications. However, earlier machines were fitted with oil level plugs which did not automatically limit the oil volumes.
2	Check conditions of air pump drive rod and associated seal.	Refer to Major Servicing: Section 5.4 for instructions.

OIL LEAKING FROM ENGINE-END OF PUMP ASSEMBLY

	ACTION	COMMENT
1	Check that mechanism reservoir has not been overfilled with oil.	Although unlikely, incorrect filling may be responsible for the problem.
2	Replace lip seal between air pump mechanism and drive shaft bearings.	Refer to Major Servicing: Section 5.4 for instructions.

PUMP CANNOT BE ROTATED BY HAND BY MEANS OF STARTING HANDLE, FOR EXAMPLE

	ACTION	COMMENT
1	Check for ice in air pump or volute.	In cold weather, ice can form in these chambers if they have not been drained. Eliminate by means of hot water.
2	Check that air pump assembly is not faulty.	The actuator must be securely fastened to its drive rod, and must be able to reciprocate freely without touching any stationary surface. Refer to Major Servicing: Section 5.1 for instructions.
3	Check that impeller and drive shaft are free to rotate.	Although unlikely, it is possible for fibrous solids to restrict the impeller's movement. Also, failure of the drive shaft bearings may have resulted in the impeller striking the casing. Seizure of the bearings could also produce the problem. Refer to Major Servicing: Section 5.3 for instructions.

PUMP PRODUCES UNEXPECTED NOISES WHEN RUNNING

	ACTION	COMMENT
1	Check quality and quantity of oil in mechanism chamber and flushing chamber.	Incorrect volume and quality may result in overheating as well as abnormal noise. Note that extensive running under such circumstances can significantly damage pump components.
2	Check that air pump assembly is not faulty.	The actuator must be securely fastened to its drive rod, and must be able to reciprocate freely without touching any stationary surface. Refer to Major Servicing: 5.1 for instructions.
3	Check that air pump mechanism is not faulty.	Excessively worn connecting rod bearings, or an under-sized eccentric or fulcrum pin, could cause this problem. Refer to Major Servicing: 5.4

Refer to Selwood Pumps if the above advice does not solve your problem.

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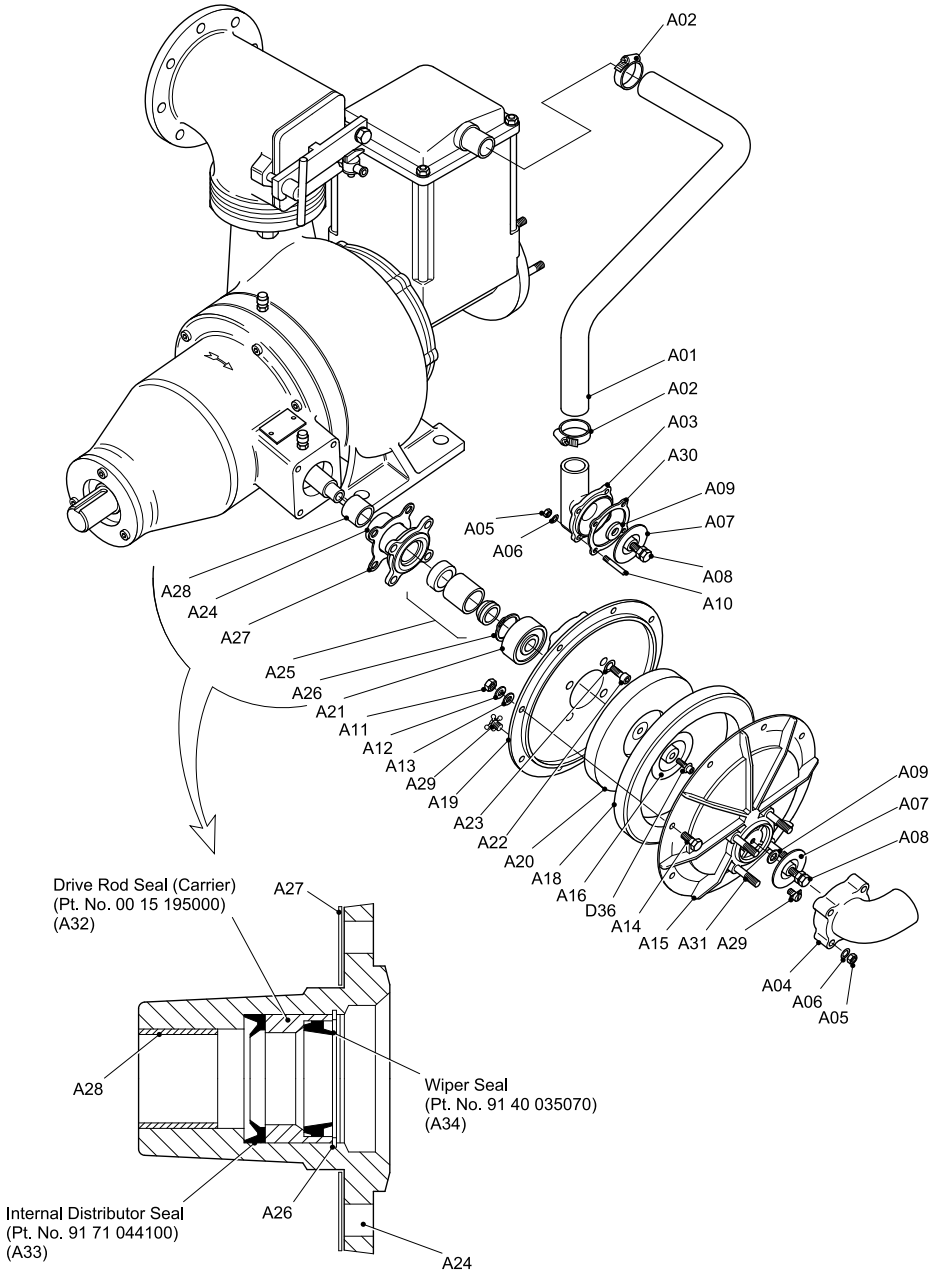


NOTES:

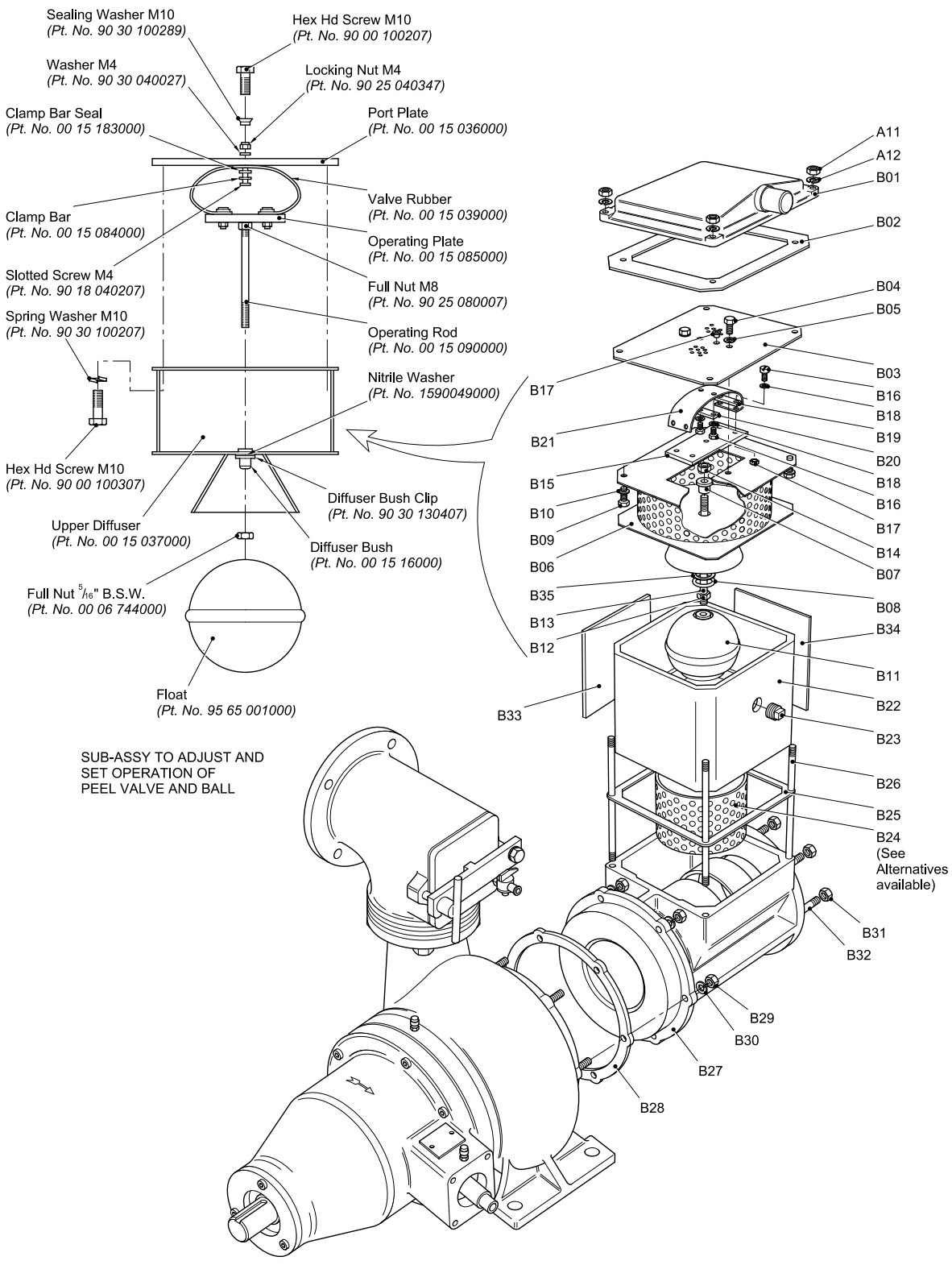
1. Complete assembly available as Part No. 0010905000 Linear Bearing and Seal Assembly.
2. Part Nos. 0015195000, 9140035070 and 9171044100 available as sub-assembly Part No. 9133035380.
3. Ensure that seal components are positioned as shown above, and are retained by the internal circlip. Great care must be exercised when fitting the circlip to ensure that the lip of the wiper seal is not damaged by the hand tools used. See Workshop Tools Section 6.4.
4. To safeguard the sealing lips, lubricate the bearing and seals with light oil and use seal installation tool when fitting assembled housing unit to pump assembly. See Workshop Tools Section 6.5.

8 PARTS LIST

8.1 Air Pump Parts

ITEM	DESCRIPTION	PART NUMBER	QTY
A01	Air Hose	9542000000	1
A02	Hose Clip	9505007004	2
A03	Suction Valve Box	0015017000	1
A04	Exhaust Valve Cover	1592306000	1
A05	Full Nut M8	9025080004	8
A06	Spring Washer M8	9030080229	8
A07	Suction and Delivery Valve	0015021000	2
A08	Valve Stud	0015019000	2
A09	Valve Washer	0002068000	2
A10	Stud M8	9035080204	4
A11	Full Nut M10	9025100004	8
A12	Spring Washer M10	9030100229	8
A13	Washer M10	9030100024	8
A14	Hex. Head Bolt M10 x 35	9001100351	8
A15	Outer Pump Body	0015015000	1
A16	Actuator Valve	0003221200	1
D36	Actuator Screw	0015975000	1
A18	Actuator Seal	0015023000	1
A19	Inner Pump Body	0015014000	1
A20	Actuator	0015016000	1
A21	Actuator Neck Seal	0015024000	1
A22	Cap Screw M12 x 50	9001240-02	4
A23	Cap Screw Washer	0015100000	4
A24	Bearing and Seal Housing	0015098000	1
A25	Drive Rod Seal Assembly	9133035380	1
A26	Internal Circlip	94D130050A	1
A27	Housing Gasket	0015008000	1
A28	Drive Rod Bearing	9345035301	1
A29	Drain Tap	9520103000	2
A30	Suction Valve Box Gasket	0015022000	1
A31	Stud M8	9035080554	4
†A25	Comprises:		
A32	Drive Rod Seal Carrier	0015195000	1
A33	Internal Distributor Seal	9171044100	1
A34	Wiper Seal	9140035070	1

When ordering spares, please state:
PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART


Sealing Washer M10
(Pt. No. 90 30 100289)
Hex Hd Screw M10
(Pt. No. 90 00 100207)
Washer M4
(Pt. No. 90 30 040027)
Locking Nut M4
(Pt. No. 90 25 040347)
Clamp Bar Seal
(Pt. No. 00 15 183000)
Port Plate
(Pt. No. 00 15 036000)
Valve Rubber
(Pt. No. 00 15 039000)
Clamp Bar
(Pt. No. 00 15 084000)
Operating Plate
(Pt. No. 00 15 085000)
Slotted Screw M4
(Pt. No. 90 18 040207)
Full Nut M8
(Pt. No. 90 25 080007)
Spring Washer M10
(Pt. No. 90 30 100207)
Operating Rod
(Pt. No. 00 15 090000)
Nitrile Washer
(Pt. No. 1590049000)
Hex Hd Screw M10
(Pt. No. 90 00 100307)
Diffuser Bush Clip
(Pt. No. 90 30 130407)
Upper Diffuser
(Pt. No. 00 15 037000)
Diffuser Bush
(Pt. No. 00 15 16000)
Full Nut 5/16" B.S.W.
(Pt. No. 00 06 744000)
Float
(Pt. No. 95 65 001000)
SUB-ASSY TO ADJUST AND
SET OPERATION OF
PEEL VALVE AND BALL
A11
A12
B01
B02
B04
B05
B03
B16
B18
B19
B20
B18
B16
B17
B14
B07
B08
B34
B11
B22
B23
B26
B25
B24
(See
Alternatives
available)
B31
B32
B29
B30
B27
B28
B17
B21
B15
B10
B09
B06
B35
B13
B12
B33

8.2 Separator Parts

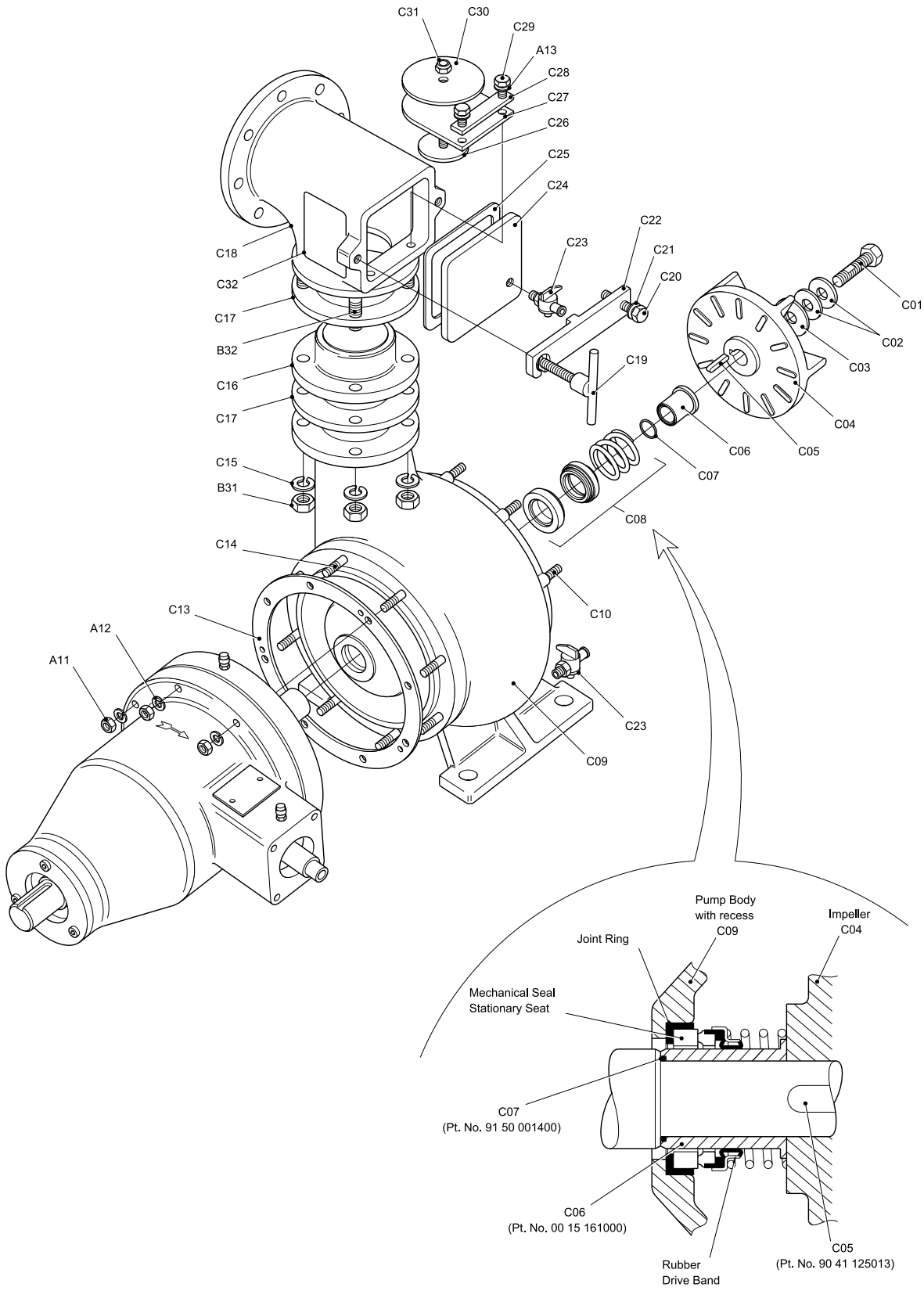
ITEM	DESCRIPTION	PART NUMBER	QTY
A11	Full Nut M10	9025100004	4
A12	Spring Washer M10	9030100229	4
B01	Separator Cap	0015034000	1
B02	Separator Cap Gasket	0015043000	1
B03	Port Plate	0015036000	1
B04	Hexagon Head Screw M10 x 20.S.S.	9000100207	2
B05	Sealing Washer M10	9030100289	2
*B06	Upper Diffuser Sub-Assembly	0015037001	1
B07	Upper Diffuser Bush	0015160000	1
B08	Upper Diffuser Bush Clip	9030130407	1
B09	Hexagon Head Screw M10 x 30.S.S.	9000100307	4
B10	Spring Washer M10 S.S.	9030100207	4
B11	Float	9565001000	1
B12	Full Nut $^{5}/_{16}$" B.S.W. S.S.	0006741030	1
B13	Operating Rod	0015090000	1
B14	Full Nut M8 S.S.	9025080007	1
B15	Operating Plate	0015085000	1
B16	Slotted Head Screws M4 x 20. S.S.	9018040207	6
B17	Locking Nut M4 S.S.	9025040307	6
B18	Washer M4 S.S.	9030040027	6
B19	Clamp Bar	0015084000	3
B20	Clamp Bar Seal	0015183000	1
B21	Peel Valve Rubber	0015039000	1
B22	Separator Body	0015033000	1
B23	Plug ½" B.S.P.T.	9522004000	1
B24	Lower Diffuser	0015038000	1
	Lower Diffuser Sludge Version	1594161000	1
B25	Separator Body Gasket	0015044000	1
B26	Tie Rod	0015045000	4
B27	Suction Tube	0010035001	1
B28	Suction Tube Gasket	0010048000	1
B29	Full Nut M12	9025120004	6
B30	Spring Washer M12	9030120229	6
B31	Full Nut M16	9025160004	8
B32	Stud M16	9035160551	8
B33	Selwood Label	0015190000	1
B34	Seltorque Label	0010188000	1
B35	Washer - Nitrile	1590049000	1

Sub-Assembly B06 includes B0, B08 and B35.

Items B05, B07, B08, B16, B17, B18, B20 and B21 are available as spares kit 0015996000

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART


C31
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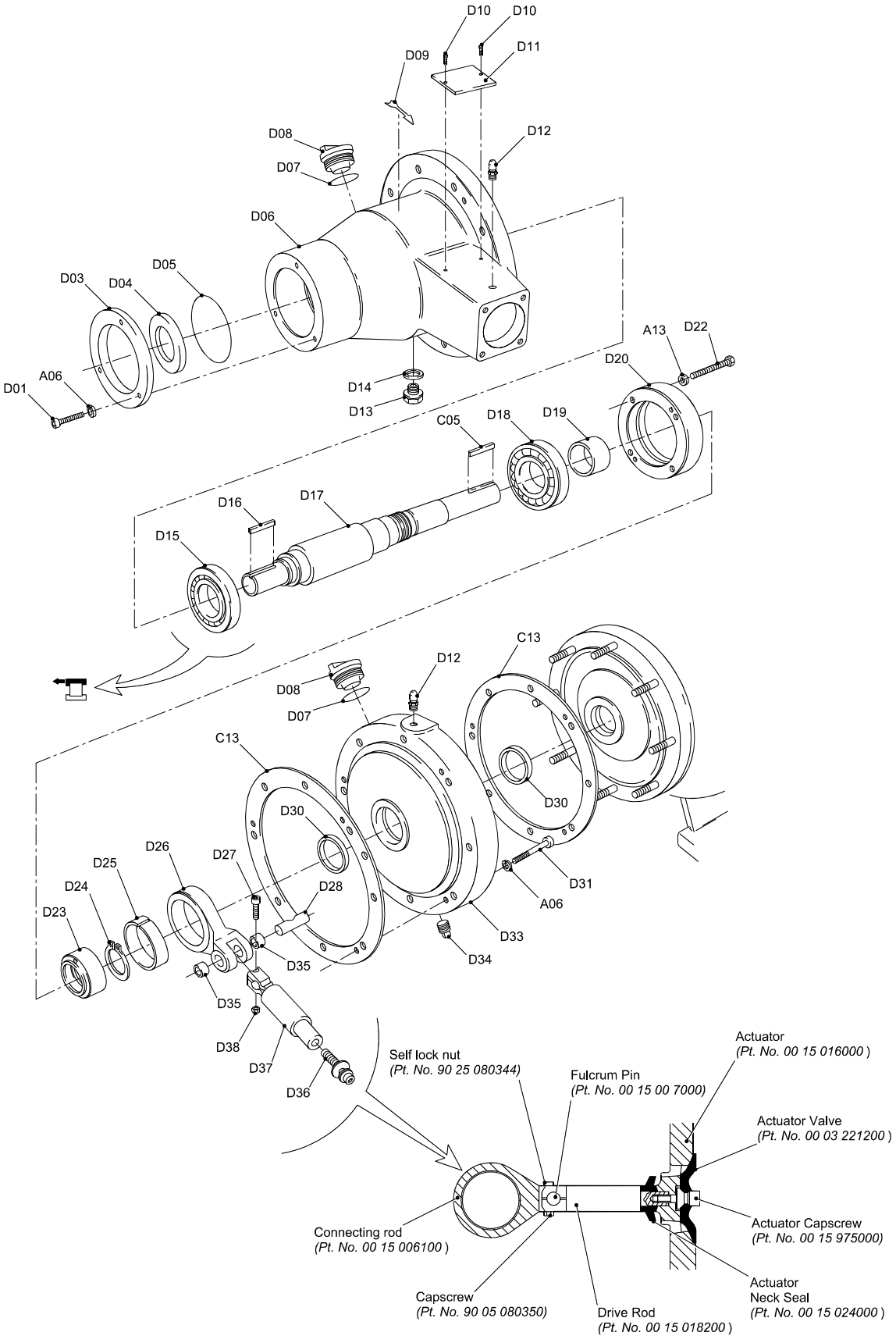
C08
C19
C18
C32
C17
B32
C16
C17
C15
B31
C14
C13
A12
A11
C10
C23
C09
Pump Body
with recess
C09
Impeller
C04
Joint Ring
Mechanical Seal
Stationary Seat
C07
(Pt. No. 91 50 001400)
C06
(Pt. No. 00 15 161000)
Rubber
Drive Band
C05
(Pt. No. 90 41 125013)

8.3 Pump Body and Delivery Valve Parts

ITEM	DESCRIPTION	PART NUMBER	QTY
C01	Impeller Screw	9000120302	1
C02	Belleville Washer	9030510359	2
C03	Impeller Washer	0010013000	1
C04	Impeller	See Below	1
C05	Impeller Key	9041104013	1
C06	Shaft Sleeve	0010161000	1
C07	Sleeve 'O' Ring	9150001050	1
C08	Mechanical Seal	9110038000	1
C09	Pump Body	0010010001	1
C10	Stud M12	9036120401	6
A11	Full Nut M10	9025100004	8
A12	Spring Washer M10	9030100229	8
C13	Body Gasket	0010011000	2
C14	Stud M10	9036100854	8
B31	Full Nut M16	9025160004	4
C15	Spring Washer M16	9030160229	4
C16	Delivery Valve Seat	0015046000	1
C17	Delivery Branch Gasket	0015047000	2
B32	Stud M16	9035160551	4
C18	Delivery Valve Chamber	0010026001	1
C19	T-Bolt	0015031000	1
C20	Hexagon Bolt M16 x 65	9001160651	1
C21	Washer M16	9030160024	1
C22	Locking Bar	0015030000	1
C23	Drain Tap	9520003000	2
C24	Inspection Panel	0015029000	1
C25	Inspection Panel Gasket	0015028000	1
C26	Lower Valve Plate	0015032000	1
C27	Delivery Valve Rubber	0006604000	1
C28	Delivery Valve Clamping Bar	0015027000	1
C29	Hexagon Head Screw M10 x 30	9000100301	2
A13	Washer M10	9030100024	2
C30	Upper Valve Plate	0006698000	1
C31	Locking Nut M12	9025120344	1
C32	Check List Label	0008072000	1
ALTERNATIVE IMPELLERS:			
C04	Standard S.G. Iron Impeller - 215 Diameter	0010012000	
	Non-Standard Impeller 212 Diameter, Suffix B	0010012100	
	Non-Standard Impeller 173.4 Diameter, Suffix C	0010012200	
	Non-Standard Impeller Diameter, Suffix D	0010012300	
	Non-Standard Impeller Diameter, Suffix E	0010012400	
	Non-Standard Impeller Diameter, Suffix F	0010012500	
	Impellers Also Available In Alternative Materials.		
C01	Impeller Screw Is Available In Stainless Steel.	9000120357	

When ordering spares, please state:
PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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C13
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D30
D26
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D28
D23
D31
A06
D33
D34
D35
D35
D38
D37
D36
Self lock nut
(Pt. No. 90 25 080344)
Fulcrum Pin
(Pt. No. 00 15 00 7000)
Actuator
(Pt. No. 00 15 016000)
Actuator Valve
(Pt. No. 00 03 221200)
Actuator Capscrew
(Pt. No. 00 15 975000)
Actuator
Neck Seal
(Pt. No. 00 15 024000)
Connecting rod
(Pt. No. 00 15 006100)
Capscrew
(Pt. No. 90 05 080350)
Drive Rod
(Pt. No. 00 15 018200)

8.4 Bearing Housing and Air Pump Drive Assembly Parts

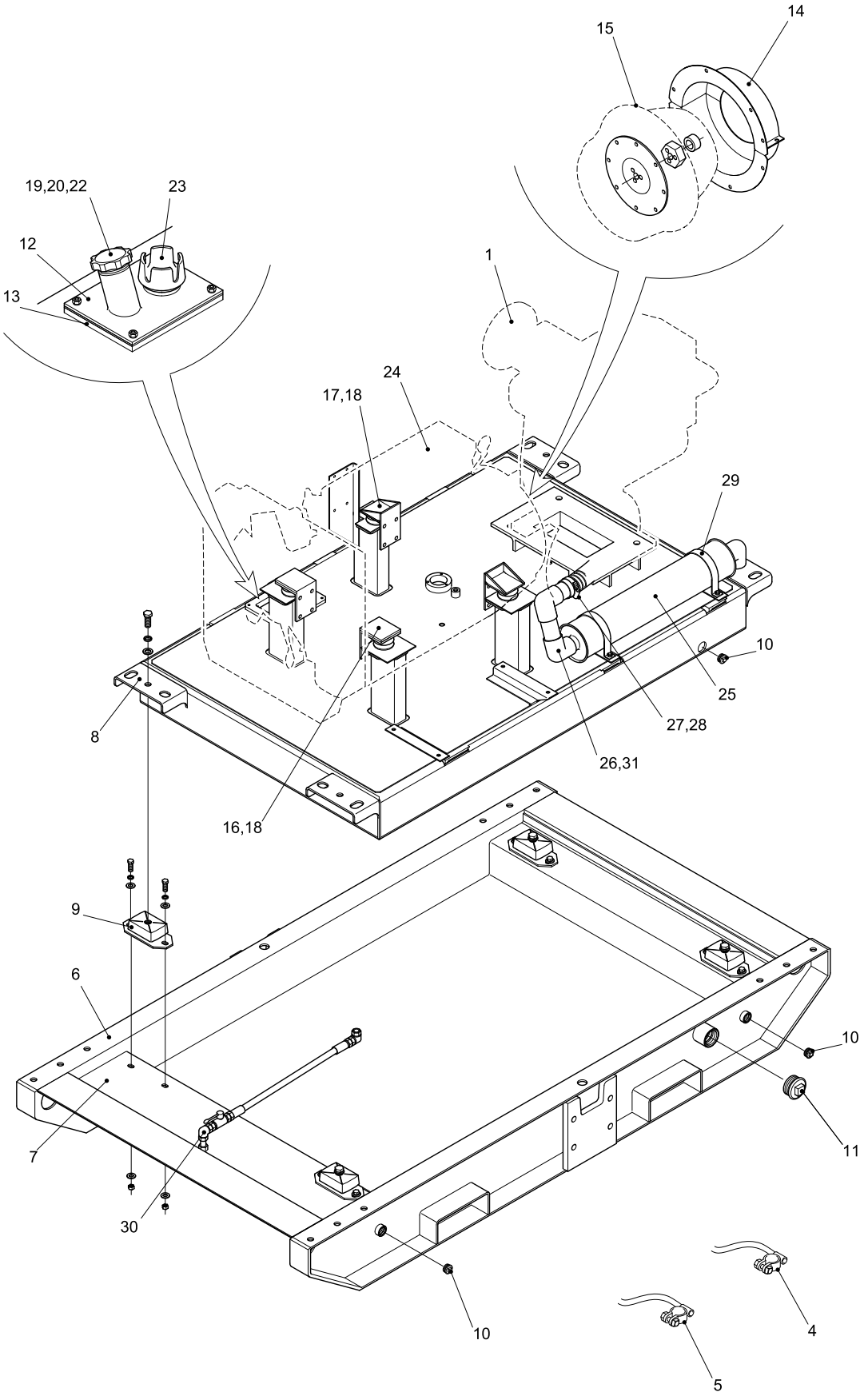
ITEM	DESCRIPTION	PART NUMBER	QTY
D01	Hex. Socket Capscrew M8 x 25	9005080250	3
A06	Spring Washer M8	9030080229	3
D03	Lip Seal Carrier	0010200000	1
D04	Lip Seal	9127040070	1
D05	'O' Ring	9100308450	1
D06	Bearing Housing	0010001201	1
D07	'O' Ring	9100300250	2
D08	Oil Filler/Level Plug	0015186000	2
D09	Label - Direction of Rotation	0015078000	1
D10	Hammer Drive Screw No. 2 x ¼	9045002259	2
D11	Label – Manufacturer	0015071000	1
D12	Breather Valve $^{1}/_{8}$ -13.S.P.T.	9528001000	2
D13	Flanged Drain Plug ¾ - B.S.P.	9521005000	1
D14	Sealing Washer ¾- B.S.P.	9030710272	1
D15	Roller Bearing	9309F20930	1
D16	Rect Parallel Key (Pump Coupling)	9041105613	1
D17	Drive Shaft	0010002200	1
D18	Ball Bearing	9300630932	1
D19	Spacer	0010201000	1
D20	Bearing Carrier	0010199000	1
A13	Plain Washer M10	9030100024	4
D22	Hex. Head Setscrew M10 x 75	9000100751	4
D23	Eccentric	0010009200	1
D24	Circlip - External	9401000381	1
D25	Large End Bush	0015066000	1
D26	Connecting Rod	0015006100	1
D27	Hex. Socket Capscrew M8 X 35	9005080350	1
D28	Fulcrum Pin	0015007000	1
C13	Gasket	0010011000	2
D30	Lip Seal	9127038070	2
D31	Hex. Socket Capscrew M8 x 45	9005080450	3
A06	Spring Washer M8	9030080229	3
D33	Flushing Chamber	0010157001	1
D34	Drain Plug ½ - B.S.P.T.	9522004000	1
D35	Small End Bush	0015065100	2
D36	Actuator Capscrew	0015975000	1
D37	Air Pump Drive Rod	0015018200	1
D38	Self Locking Nut - M8	9025080344	1
C05	Impeller Key	9041104013	1

Items D27, D36, D37 and D38 can be supplied as Sub-Assembly 0015976000.

Items D25, D26 and D35 are supplied as Sub-Assembly 0015908000. These items are also available as a service exchange unit reference Part No. 0015998000,. i.e. connecting rod with worn bushes may be exchanged for a service repaired unit.

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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19,20,22
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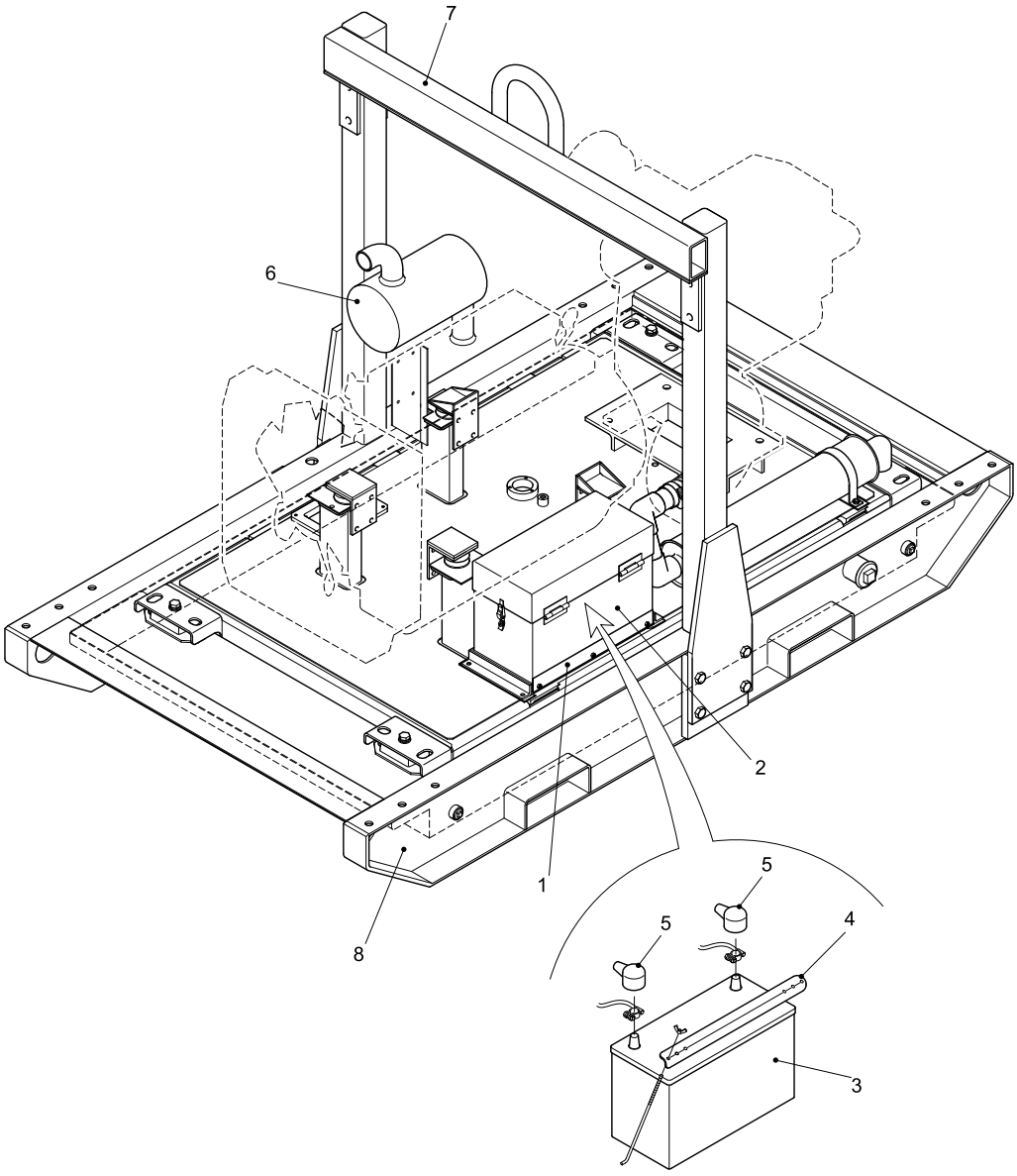
8.5 Isuzu/4LE1 Pump Unit, Core Build on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Seltorque S100 Pump Unit	0010901100	1
2/NI	Fuel Line, Tank to Water Trap	1002364000	1
3/NI	Fuel Line, Leak-off to Tank	1500308000	1
4	Battery Lead, +ve	1500309000	1
5	Battery Lead, -ve	1500310000	1
6	Skid Chassis Assembly	1002282000	1
7	Skid Base Frame	1503185000	1
8	Chassis Fuel Tank (S100/Isuzu 4LE1)	1003189000	1
9	A/V Mount	9680M00011	4
10	Plug ¾" BSP	9522P00601	3
11	Plug 2" BSP	9522P01601	1
12	Fuel Filler Plate with Bayonet	1501279000	1
13	Fuel Filler Plate Gasket	1501280000	1
14	Coupling Half Guard	1502286000	1
15	Centa Flywheel Coupling 38 ∅ bore	9600M00014	1
16	A/V Mount Bracket, Front	1002283000	2
17	A/V Mount Bracket, Rear	1502281000	2
18	A/V Mount	9680M00027	4
19	Fuel Tank Filler Filter	0004463000	1
20	Fuel Filler Gasket	0015063000	1
21/NI	Fuel Tank Feed Filter	1500277000	1
22	Filler Cap	9550004000	1
23	Fuel Tank Contents Gauge	9590K04801	1
24	Isuzu 4LE1 Diesel Engine	92019-0001	1
25	Air Pump Silencer 1½" BSP Connections	9510P01201	1
26	90^0 Equal Elbow 1½" BSP Female Galvanised	9517P01202	3
27	Worm Drive Hose Clip	9505007004	2
28	Suction Hose 50 I/D	9542000000	1
29	Clamp	0015509940	2
30	Engine Drain Hose Assembly (Isuzu)	92700-0185	1
31	Longscrew 1½" BSP	1502063000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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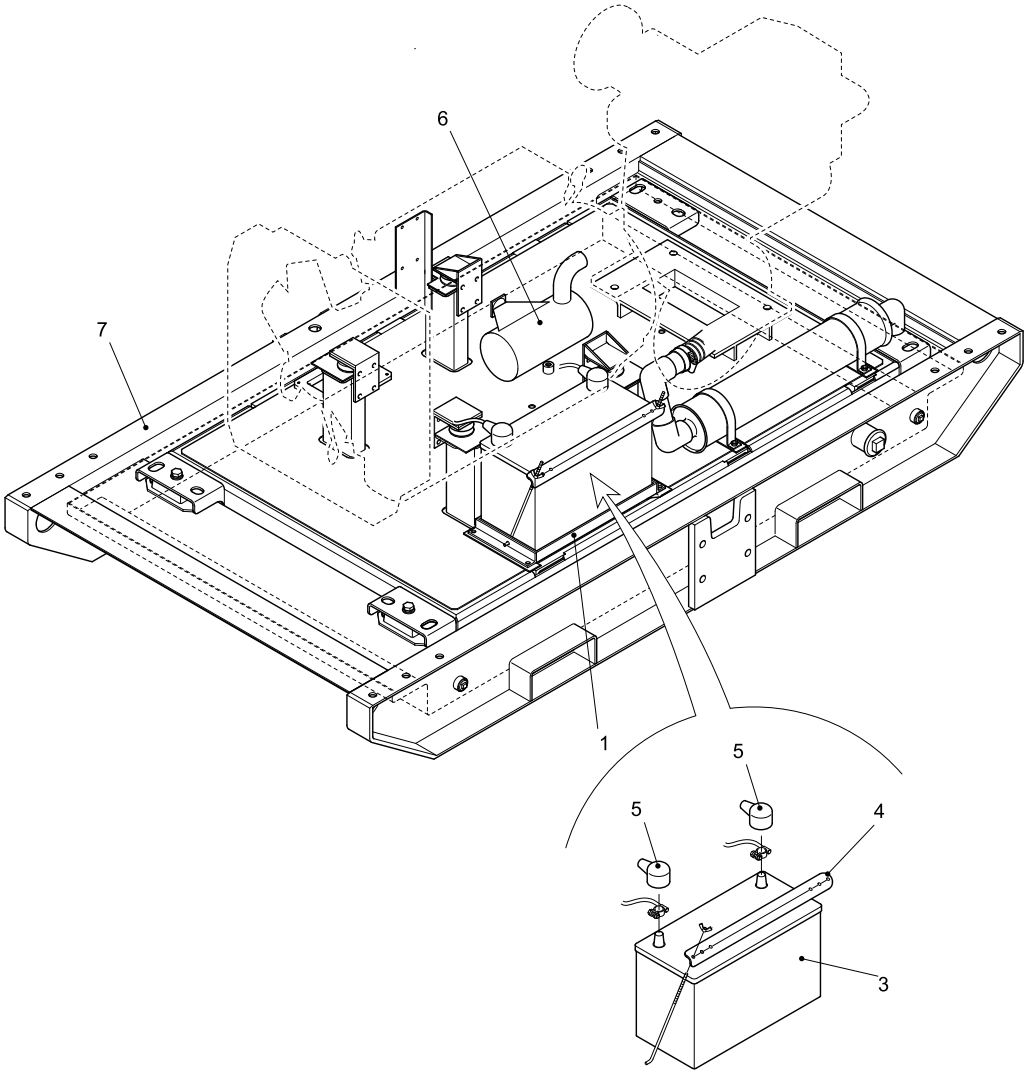
8.6 Isuzu/4LE1 Pump Unit, Build 'A' on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Battery Tray	1500224000	1
2	Battery Box	1590239000	1
3	Battery 95 A/hr	92800-0001	1
4	Battery Clamp	9297500000	1
5	Terminal Boot	0006712000	2
6	Exhaust Silencer (Isuzu 4LE1)	92700-0222	1
7	Roll Cage Lifting Frame	1501289000	1
8	S100/Isuzu 4LE1/Core Build	1002284C00	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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7
1
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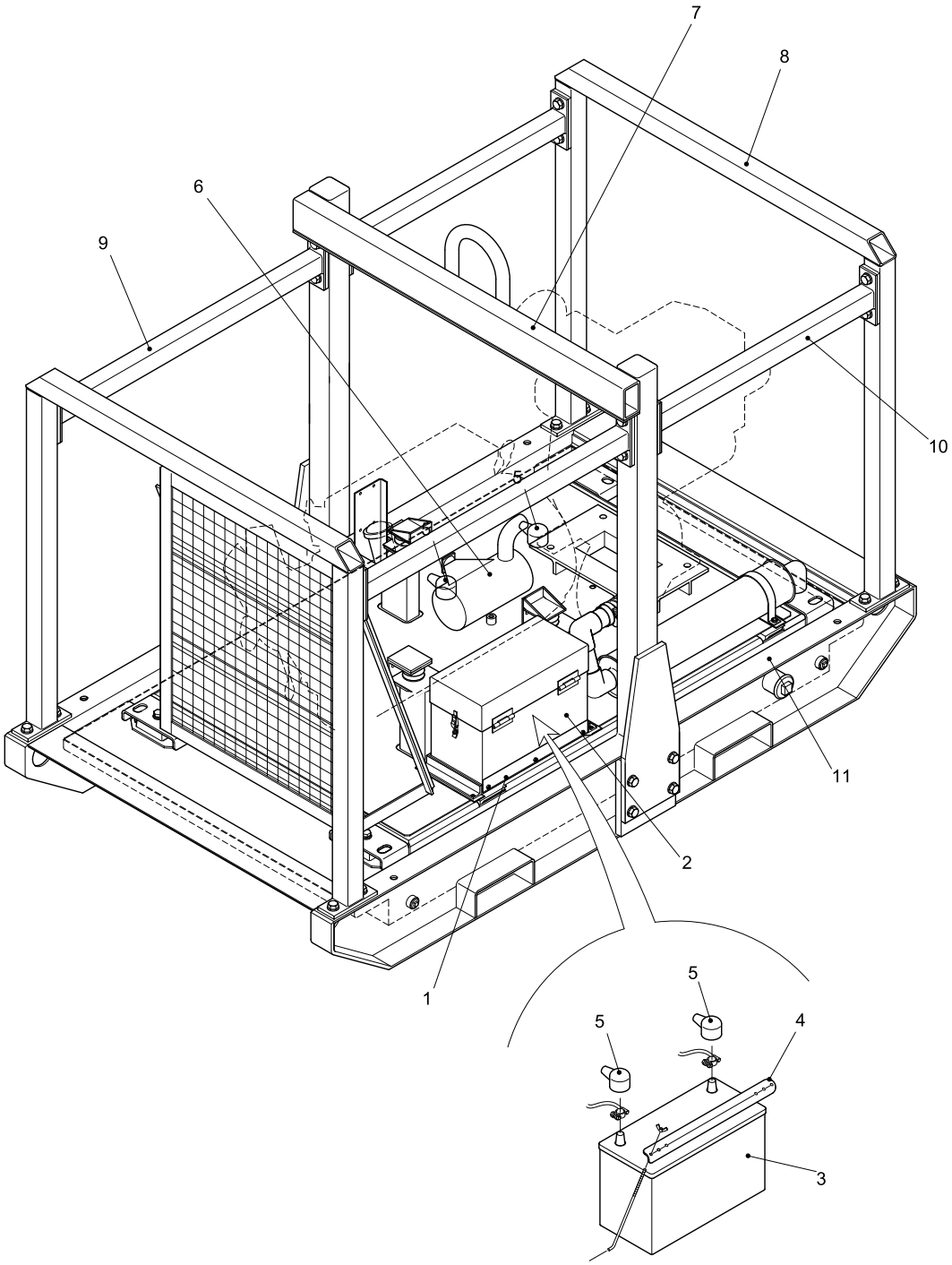
4
3

8.7 Isuzu/4LE1 Pump Unit, Build 'B' on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Battery Tray	1500224000	1
2/NI	Battery Box (Optional)	1590239000	1
3	Battery 95 A/hr	92800-0001	1
4	Battery Clamp	9297500000	1
5	Terminal Boot	0006712000	2
6	Exhaust Silencer (Isuzu 4LE1)	92700-0222	1
7	S100/Isuzu 4LE1/Core Build	1002284C00	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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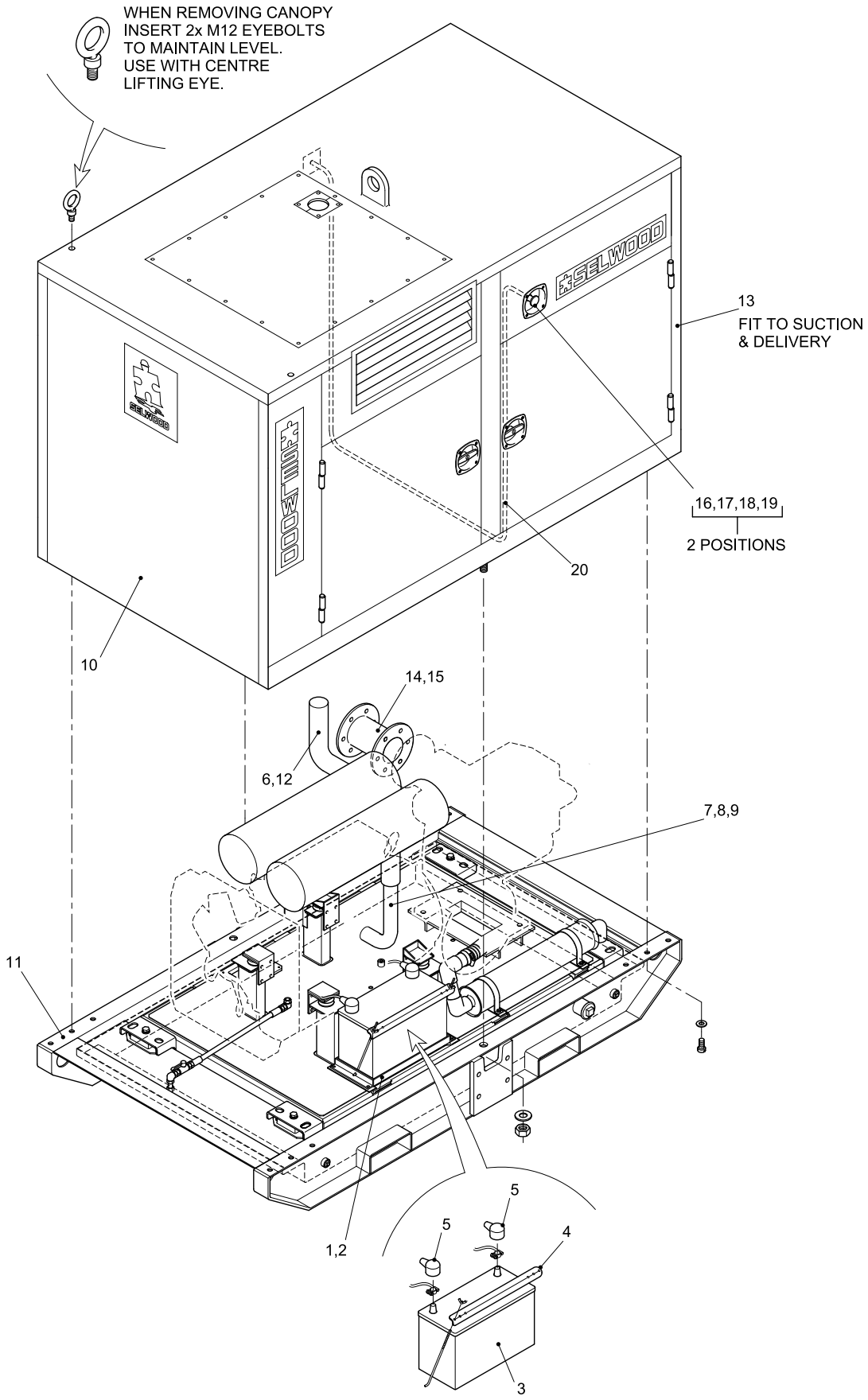
8.8 Isuzu/4LE1 Pump Unit, Build 'C' on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Battery Tray	1500224000	1
2	Battery Box	1590239000	1
3	Battery 95 A/hr	92800-0001	1
4	Battery Clamp	9297500000	1
5	Terminal Boot	0006712000	2
6	Exhaust Silencer (Isuzu 4LE1)	92700-0222	1
7	Roll Cage Lift Frame	1501289000	1
8	Roll Cage End	1501290000	2
9	Roll Cage Side Bar (970 LG)	1501375000	2
10	Roll Cage Side Bar (805 LG)	1501376000	2
11	S100/Isuzu 4LE1/Skid Core Build	1002284C00	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

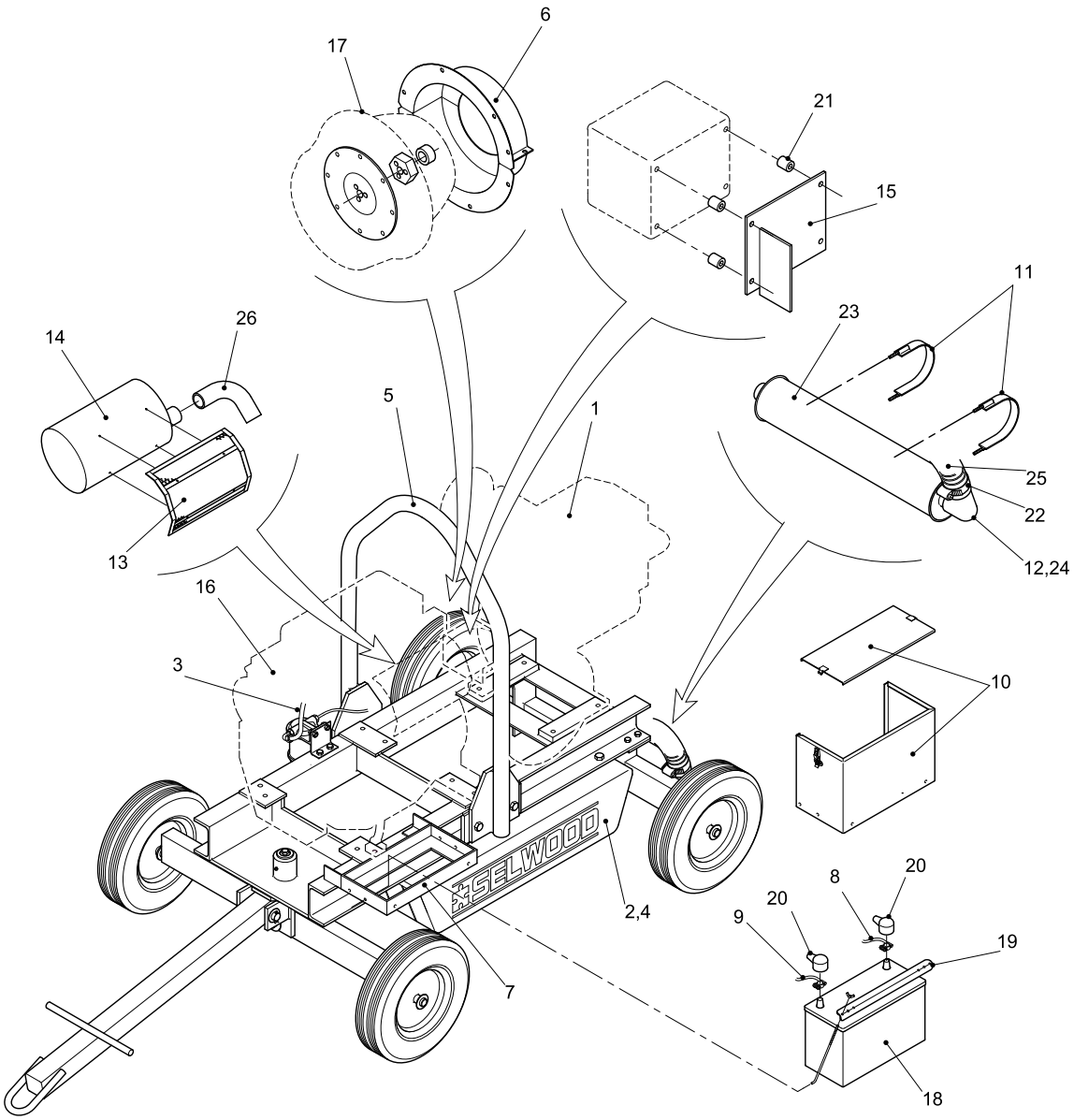

WHEN REMOVING CANOPY
INSERT 2x M12 EYEBOLTS
TO MAINTAIN LEVEL.
USE WITH CENTRE
LIFTING EYE.
13
FIT TO SUCTION
& DELIVERY
16,17,18,19
2 POSITIONS
20
10
14,15
6,12
7,8,9
11
1,2
5
5
4
3

8.9 Isuzu/4LE1 Pump Unit, Supersilent Canopy Build on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Battery Tray	1500224000	1
2	Battery Mounting Plate	1502353000	1
3	Battery 95 A/hr	92800-0001	1
4	Battery Clamp	9297500000	1
5	Terminal Boot	0006712000	2
6	Isuzu 4LE1 Canopy Exhaust Silencer Kit	92700-0228	1
7	Silencer Connector	1003190000	1
8	Exhaust Clamp 42 mm	9506M04101	2
9	Heat Resistant Pipe Cover	1003291000	1
10	S100/Isuzu 4LE1 Canopy Assembly	1002307000	1
11	S100/Isuzu 4LE1/Skid Core Build	1002284C00	1
12	Rain Cap 3”	92700-0171	1
13	Bauer Surround Gasket	1003165000	2
14	100 mm Flanged Connector 280 mm	1002335000	1
15	100 mm Flanged Gasket	0010079000	1
16	Black Coated Dish Pad	9728-00045	2
17	Gasket	9728-00046	2
18	Mushroom Pushbutton	92800-0054	2
19	Contact Block	92800-0055	2
20	Emergency Stop Button Loom	1503238000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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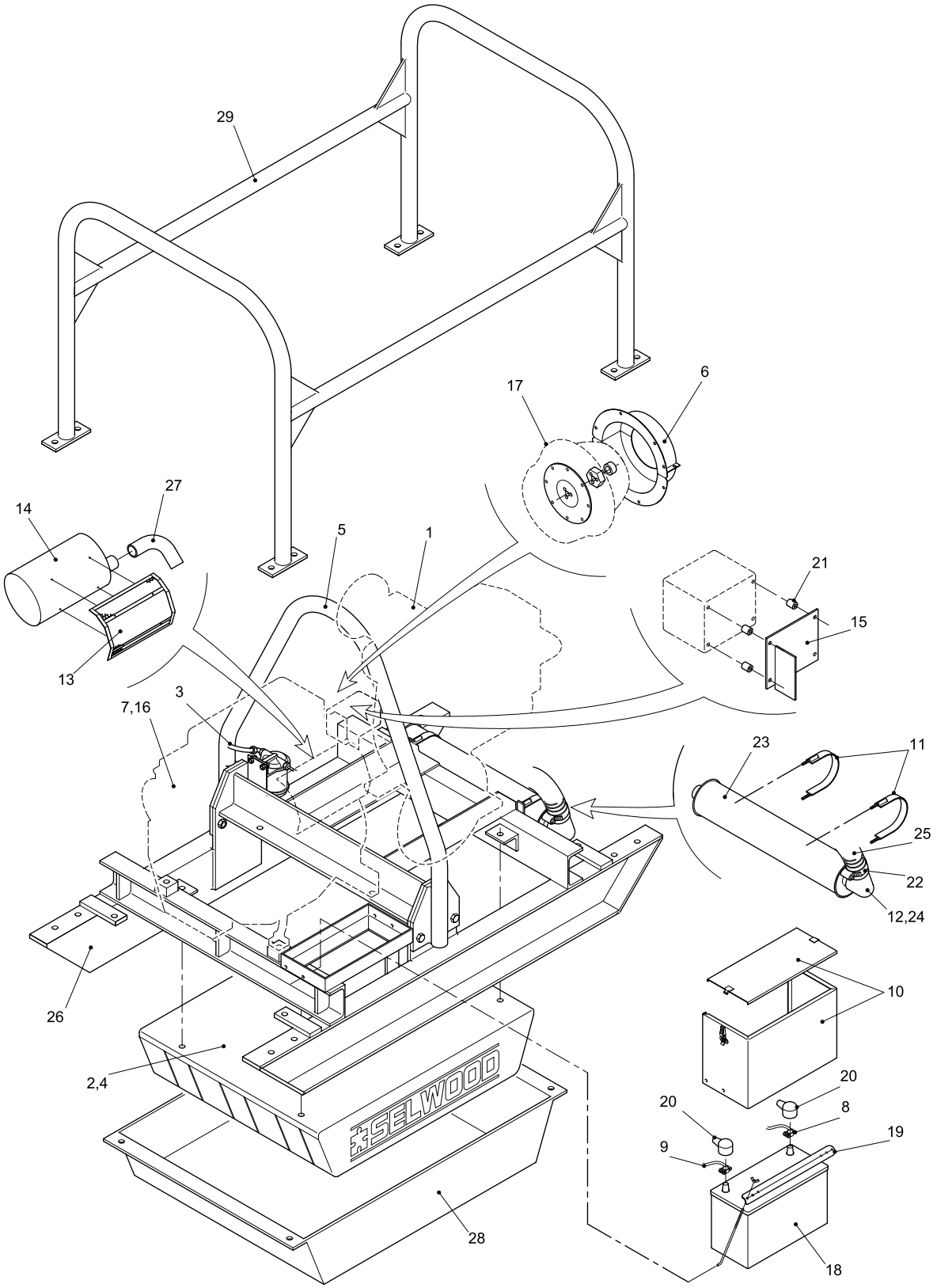
18

8.10 Deutz/F3L1011 Pump Unit on 4-Wheel Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Seltorque S100 Pump Unit	0010901100	1
2	Chassis Tank Assembly 105 litre	1003006000	1
3	Fuel Line, Tank to Lift Pump	1503066000	1
4	Fuel return Line, Leak Off to Tank	0008915100	1
5	Lifting Eye	1502237000	1
6	Coupling Guard	1002217000	2
7	Battery Tray	1502162000	1
8	Battery Lead +ve	0008981000	1
9	Battery Lead -ve	1092173000	1
10	Battery Box	1502163000	1
11	Clamp	1502164000	2
12	Spigot	1589144000	1
13	Exhaust Guard	1093116000	1
14	Exhaust Modification	1093111000	1
15	Instrument Panel Bracket	1502300000	1
16	Deutz F3L1011 Diesel engine 1600 rpm	92027-0001	1
17	Centa Flywheel Coupling	9600M00014	1
18	Battery 95 A/hr	92800-0001	1
19	Battery Clamp c/w Tie Rod and Nuts	9297500000	1
20	Terminal Boot	0006712000	2
21	Instrument A/V Mounts	9680M00006	4
22	Worm Drive Hose Clip	9505007004	2
23	Silencer (Air Pump) 1½” BSP Connections	9510P01201	1
24	90^0 Equal Elbow 1½” BSP	9517P01202	1
25	Suction Hose 50 I/D	9542000000	1
26	Exhaust Tailpipe Modified	1002334000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART


29
17
6
27
14
5
1
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13
3
7,16
23
11
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22
12,24
26
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2,4
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19
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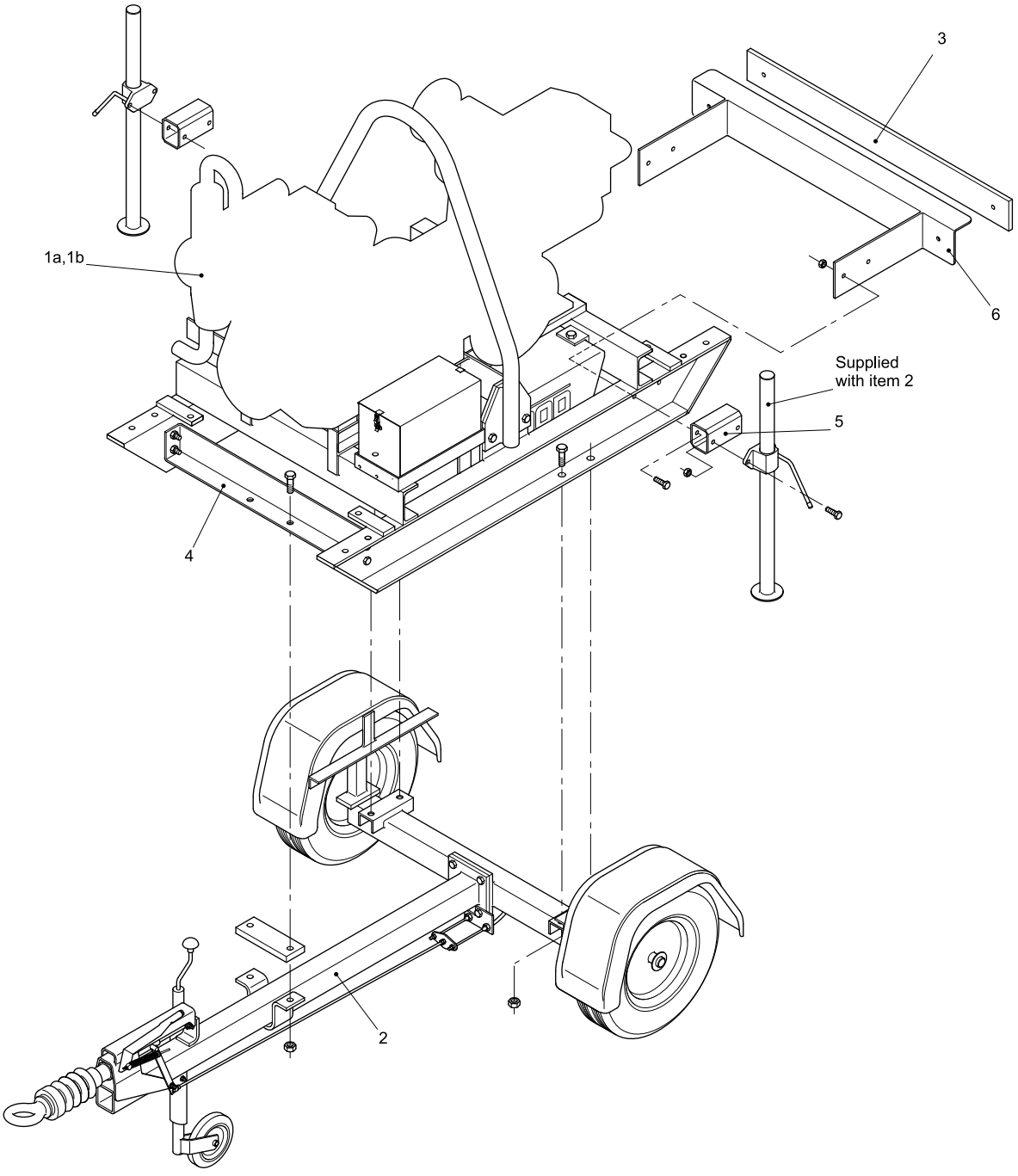
28
18

8.11 Deutz/F3L1011 Pump Unit on Skid Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Seltorque S100 Pump Unit	0010901100	1
2	Chassis Tank Assembly 105 litre	1502478000	1
3	Fuel Line, Tank to Lift Pump	1002218000	1
4	Fuel Return Line, Leak Off to Tank	0008915100	1
5	Lifting Eye	1002213000	1
6	Coupling Guard	1002217000	2
7	Oil Drain Tap	9520M01801	1
8	Battery Lead +ve	1503068000	1
9	Battery Lead -ve	1092173000	1
10	Battery Box	1502163000	1
11	Clamp	1503021000	2
12	Spigot	1589144000	1
13	Exhaust Guard	1093116000	1
14	Exhaust Modification	1093111000	1
15	Instrument Panel Bracket	1502300000	1
16	Deutz F3L1011 Diesel Engine 1600 rpm	92027-0001	1
17	Centa Flywheel Coupling	9600M00014	1
18	Battery 95 A/hr	92800-0001	1
19	Battery Clamp c/w Tie Rods and Nuts	9297500000	1
20	Terminal Boot	0006712000	2
21	Instrument A/V Mounts	9680M0006	4
22	Worm Drive Hose Clip	9595007004	2
23	Silencer (Air Pump) 1½” BSP Connections	9510P01201	1
24	90^0 Equal Elbow 1½” BSP	9517P01202	1
25	Suction Hose 50 I/D	9542000000	1
26	Skid Chassis	1003013000	1
27	Exhaust Tailpipe Modified	1002234000	1
28	Drip Tray (optional)	1502360000	1
29	Guard Frame (optional)	1002365000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

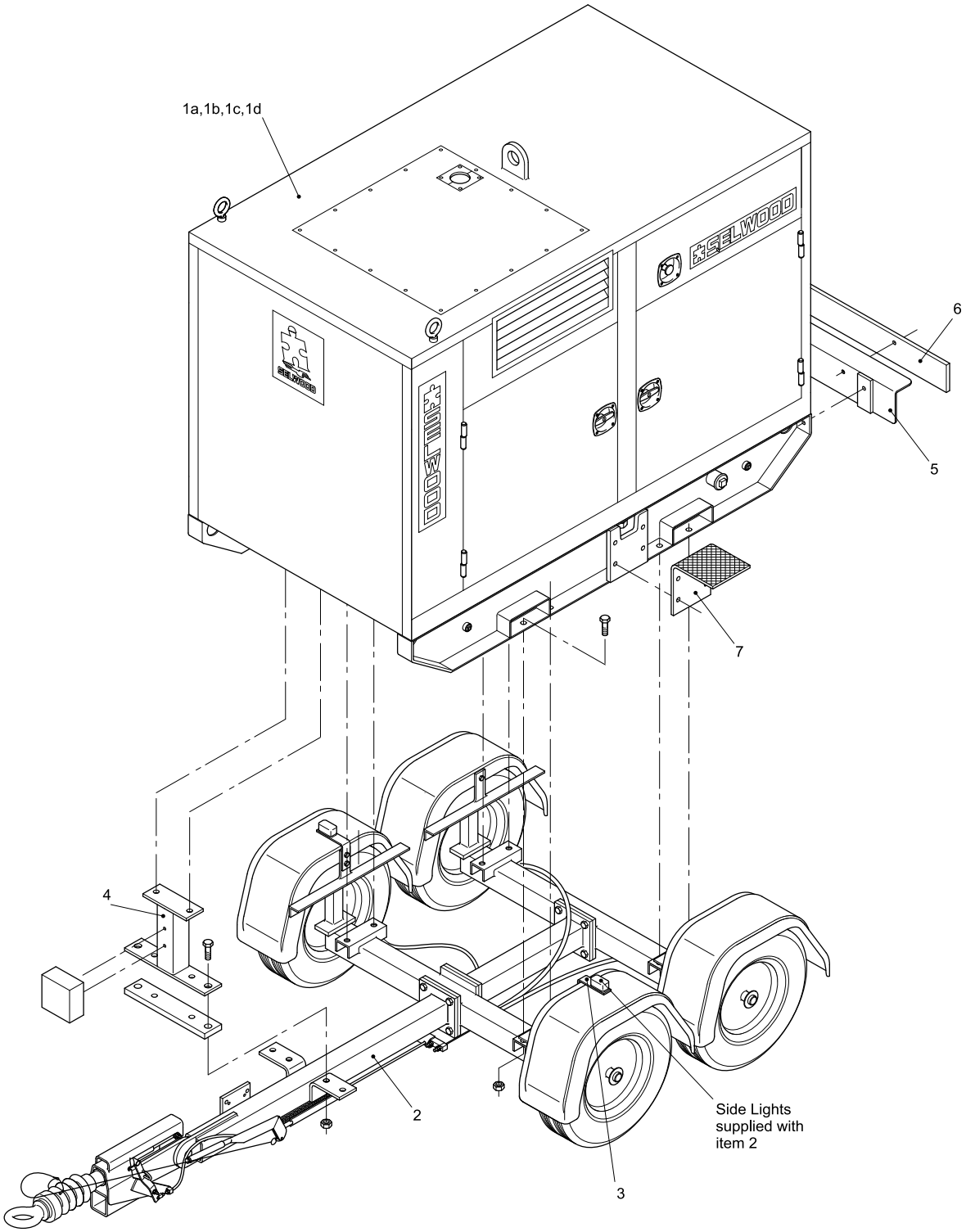

3
1a,1b
6
Supplied
with item 2
5
4
2

8.12 Fast Tow Kit, Open Set

ITEM	DESCRIPTION	PART NUMBER	QTY
1a	S100/Deutz 2 F3L1011 or Skid Chassis	1003011000	1
1b	S100/Detroit 2105 or Skid Chassis	1003029000	1
2	Fast Tow Trailer	9729-00012	1
3	Lighting Board	9730001000	1
4	Front Cross Member	1503060000	1
5	Prop Stand Bracket	1503061000	2
6	Lighting Board Bracket	1503059000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

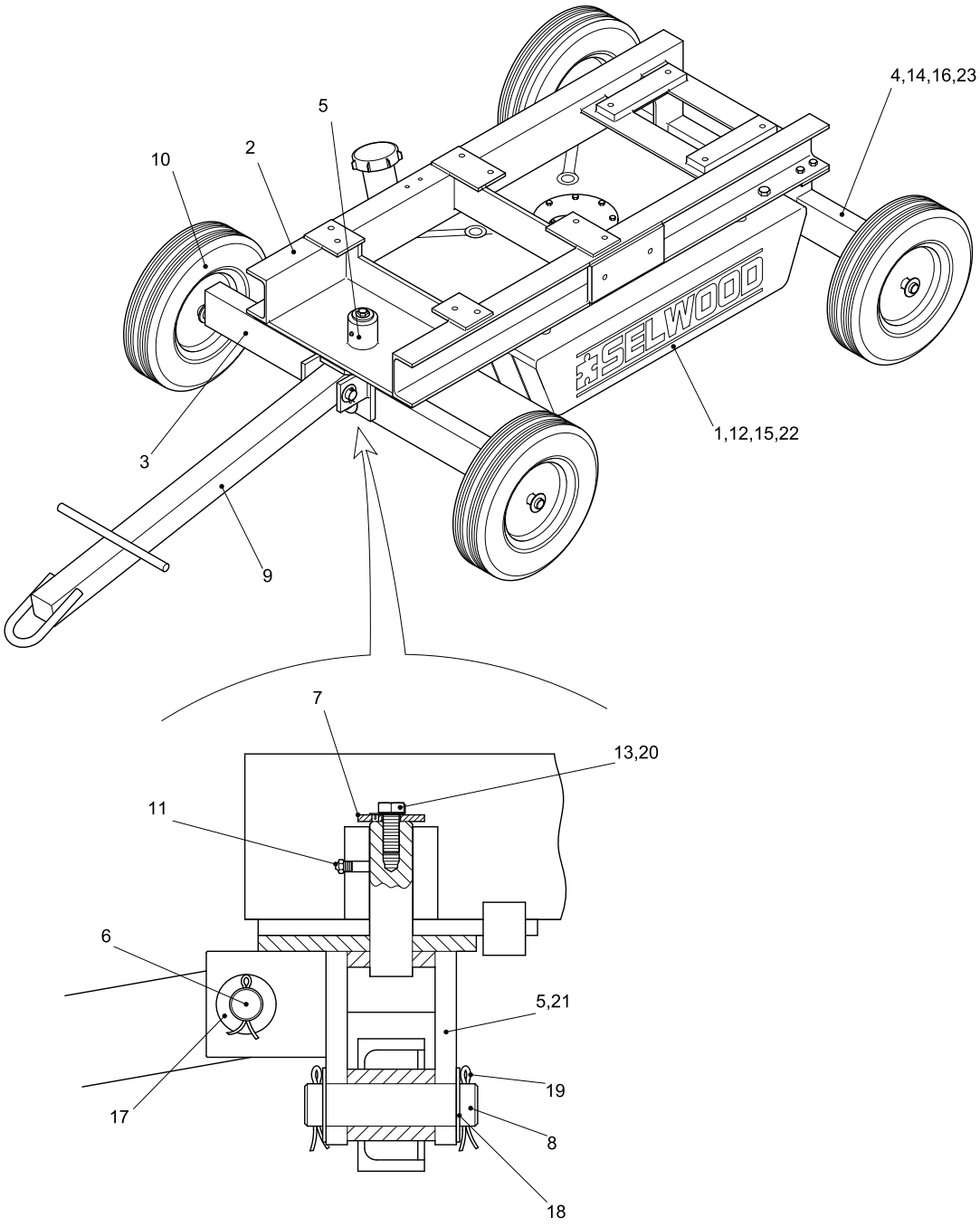

1a,1b,1c,1d
6
5
7
4
2
3
Side Lights
supplied with
item 2

8.13 Fast Tow 4-Wheel Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1a	S100/Isuzu 4LE1/Skid Build 'B'	1002284S10	1
1b	S100/Isuzu 4LE1/Skid Build 'A'	1002284S20	1
1c	S100/Isuzu 4LE1/Skid Build 'C'	1002284S30	1
1d	S100/Isuzu 4LE1/Skid Supersilent Build (Illustrated)	1002284S40	1
2	Fast Tow Trailer (Adjustable Height Drawbar)	9729-00013	1
3	Side Light Mounting Bracket	1503118000	2
4	Front Mounting Post	1503114000	1
5	Lighting Board Bracket	1503120000	1
6	Lighting Board	9730001000	1
7	Step		1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART


4,14,16,23
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SELWOOD
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5,21
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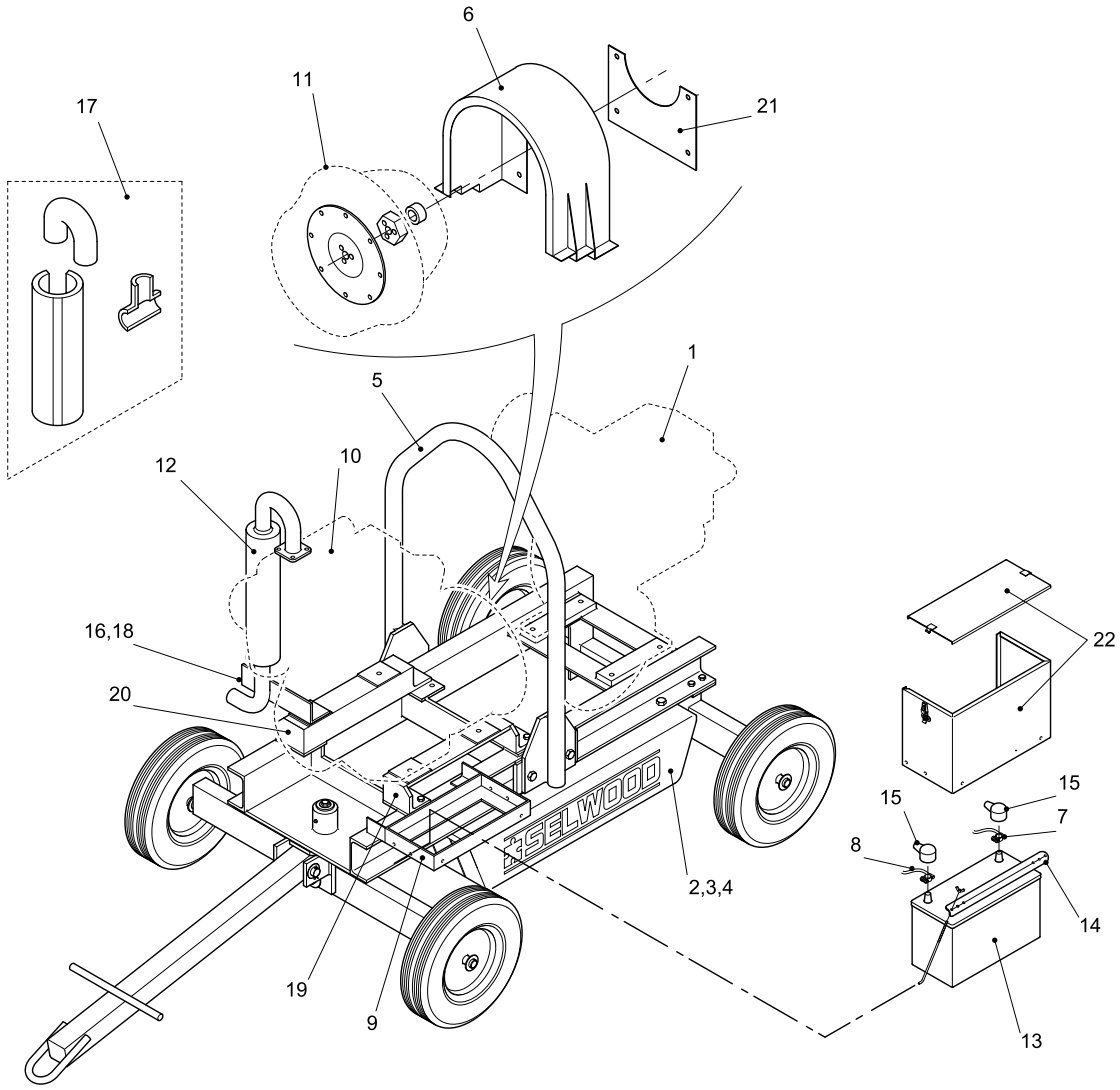
8.14 4-Wheel Site Chassis

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Fuel Tank Assembly 105 Litre, Plastic	1502478000	1
2	Chassis Frame	1003001000	1
3	Front Axle	1502158000	1
4	Rear Axle	1502159000	1
5	Pivot	1502167000	1
6	Drawbar Pivot Pin	0015053000	1
7	Pivot Top Cap	0015054000	1
8	Axle Pivot Pin	0015055000	1
9	Drawbar	1502156000	1
10	Wheel 405 Dia. Solid Rubber Tyre	9620540525	4
11	Grease Nipple (straight) 1/8” BSP	9580P00101	1
12	Hex Head Bolt M16x55 LG	9001160551	4
13	Hex Head Setscrew M12x30 LG (Wedglok)	9000120302	1
14	Hex Head Setscrew M12x35 LG	9000120351	6
15	Hex Self Locking Nut M16	9025160344	4
16	Hex Self Locking Nut M12	9025120344	6
17	Plain washer 1” Dia	0003382000	6
18	Plain washer 1¼” Dia	0006666000	2
19	Split Pin ¼” x 1¾” LG	0006667000	8
20	Lock washer M12	9030120504	1
21	Split Roll Pin 4mm Dia x 14 LG	9042040140	1
22	Plain Washer M16	9030160024	8
23	Plain Washer M12	9030120024	6

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART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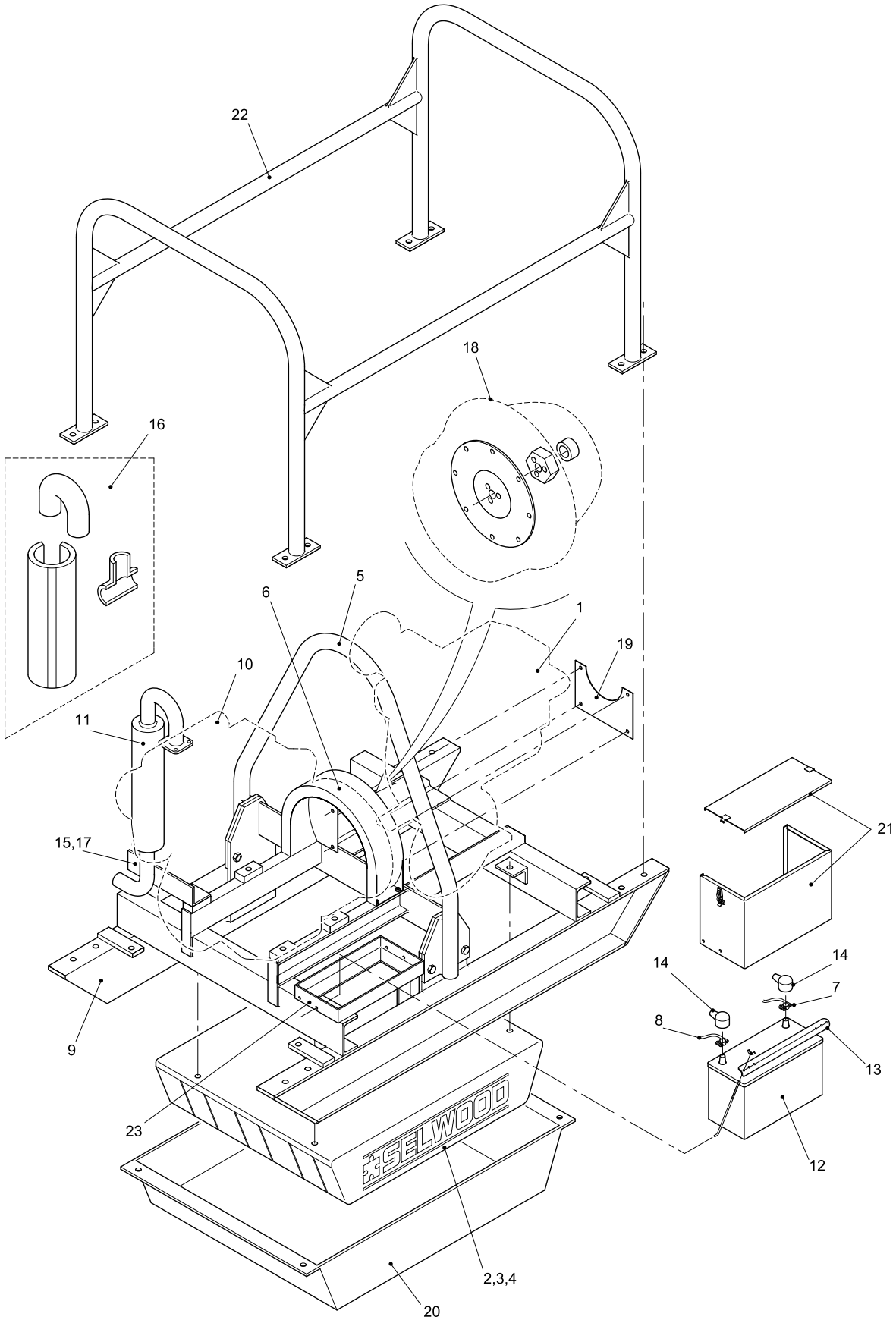
8.15 Detroit 2105 on 4-Wheel Site Chassis, Build 'B'

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Seltorque S100 Pump Unit	0010901100	1
2	Chassis/Tank Assembly 105 Litre	1003006000	1
3	Fuel Line Tank to Lift Pump	1003329000	1
4	Fuel Return Line Leak-off to Tank	1003330000	1
5	Lifting Eye	1502237000	1
6	Coupling Guard	1002333000	1
7	Battery Lead +ve	0295310000	1
8	Battery Lead -ve	1590236000	1
9	Battery Tray	1502299000	1
10	Detroit 2105 Diesel Engine 1600 rpm	92020-0003	1
11	Centa Flywheel Coupling	9600M00014	1
12	Detroit 2105 Low Level Exhaust	1003139000	1
13	Battery 95 A/hr	92800-0001	1
14	Battery Clamp c/w Tie Rods and Nuts	929750000	1
15	Terminal Boot	0006712000	2
16	Exhaust Bracket (2105)	1003140000	1
17	Detroit 2105 Low Level Exhaust Cover	1003141000	1
18	Exhaust Clamp 2"	9506002000	1
19	Detroit 2105 Adaptor Rack LH	1002318000	1
20	Detroit 2105 Adaptor Rack RH	1002319000	1
21	End Plate	1002337000	1
22	Battery Box (optional)	1503163000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART


22
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8.16 Detroit 2105 on Skid Chassis, Build 'B'

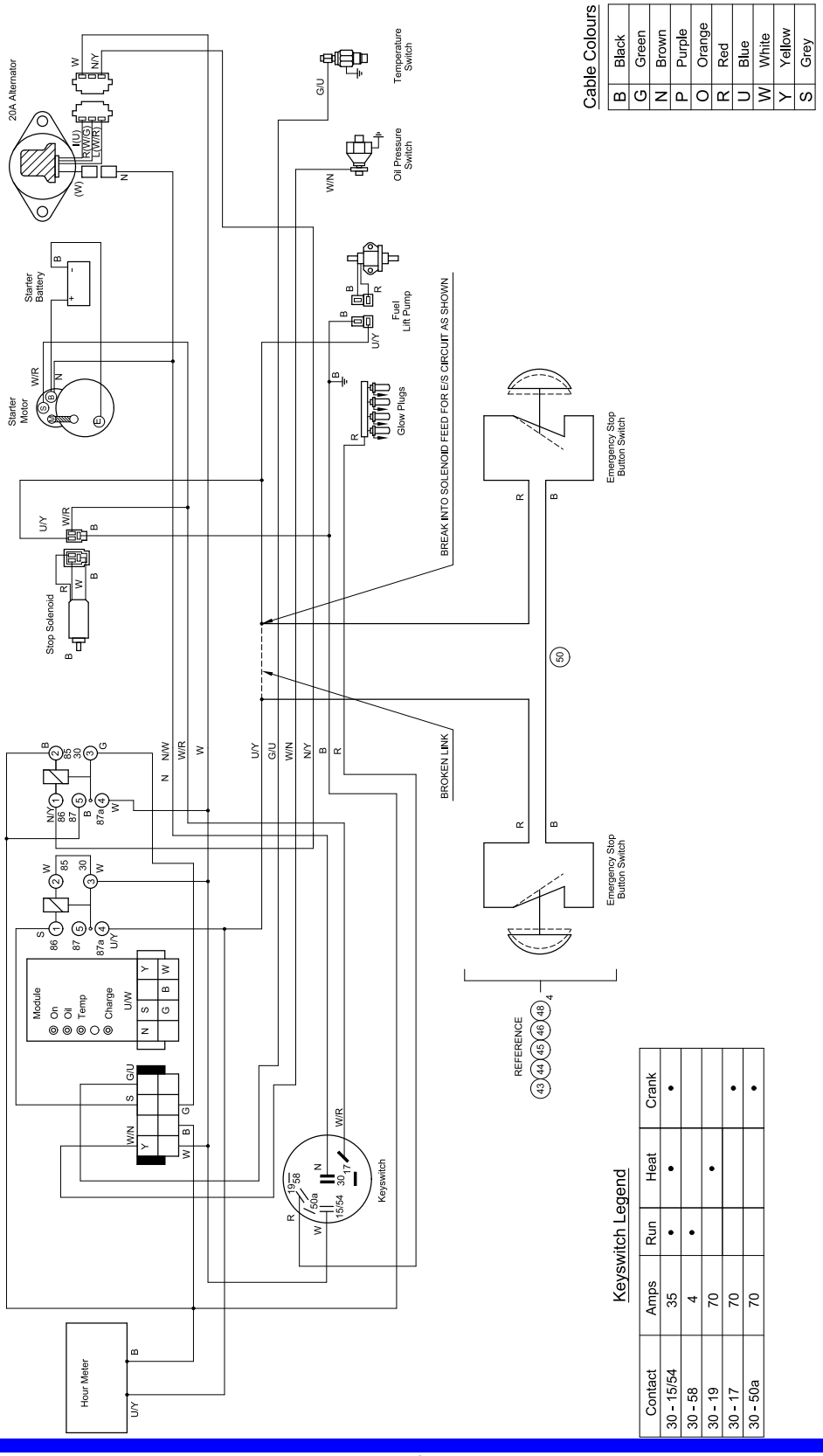
ITEM	DESCRIPTION	PART NUMBER	QTY
1	Seltorque S100 Pump Unit	0010901100	1
2	Fuel Tank Assembly 105 Litre	1502478000	1
3	Fuel Line Tank to Lift Pump	1002329000	1
4	Fuel Return Line Leak-off to Tank	1002330000	1
5	Lifting Eye	1002213000	1
6	Coupling Guard	1003031000	1
7	Battery Lead +ve	0295310000	1
8	Battery Lead -ve	1590236000	1
9	Skid Chassis	1003028000	1
10	Detroit 2105 Diesel Engine 1600 rpm	92020-0003	1
11	Detroit 2105 Low Level Exhaust	1003139000	1
12	Battery 95 A/hr	92800-0001	1
13	Battery Clamp c/w Tie Rods and Nuts	9297500000	1
14	Terminal Boot	0006712000	2
15	Exhaust Bracket (2105)	1003140000	1
16	Detroit 2105 Low Level Exhaust Cover	1003141000	1
17	Exhaust Clamp	9506002000	1
18	Centa Flywheel Coupling	9600M00014	1
19	End Plate	1003123000	1
20	Drip Tray (optional)	1502360000	1
21	Battery Box (optional)	1503163000	1
22	Guard Frame (optional)	1002365000	1
23	Battery Tray	1502299000	1

When ordering spares, please state:

PUMP NUMBER - PART NUMBER - DESCRIPTION OF PART

9 WIRING DIAGRAMS

9.1 Isuzu 4LE1 Engine/Canopy



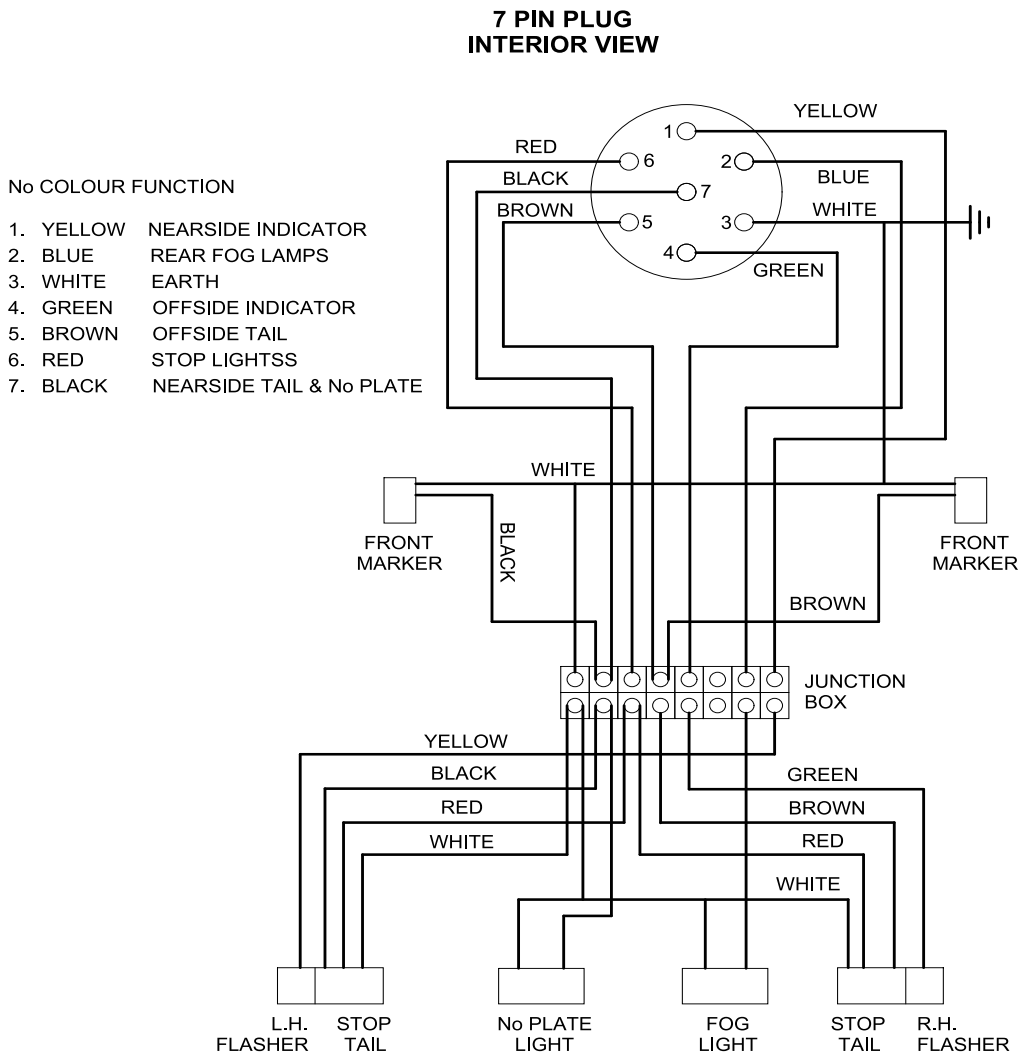
Cable Colours

B	Black
G	Green
N	Brown
P	Purple
O	Orange
R	Red
U	Blue
W	White
Y	Yellow
S	Grey

Keyswitch Legend

Contact	Amps	Run	Heat	Crank
30 - 15/54	35	•	•	•
30 - 58	4	•		
30 - 19	70		•	
30 - 17	70			•
30 - 50a	70			•

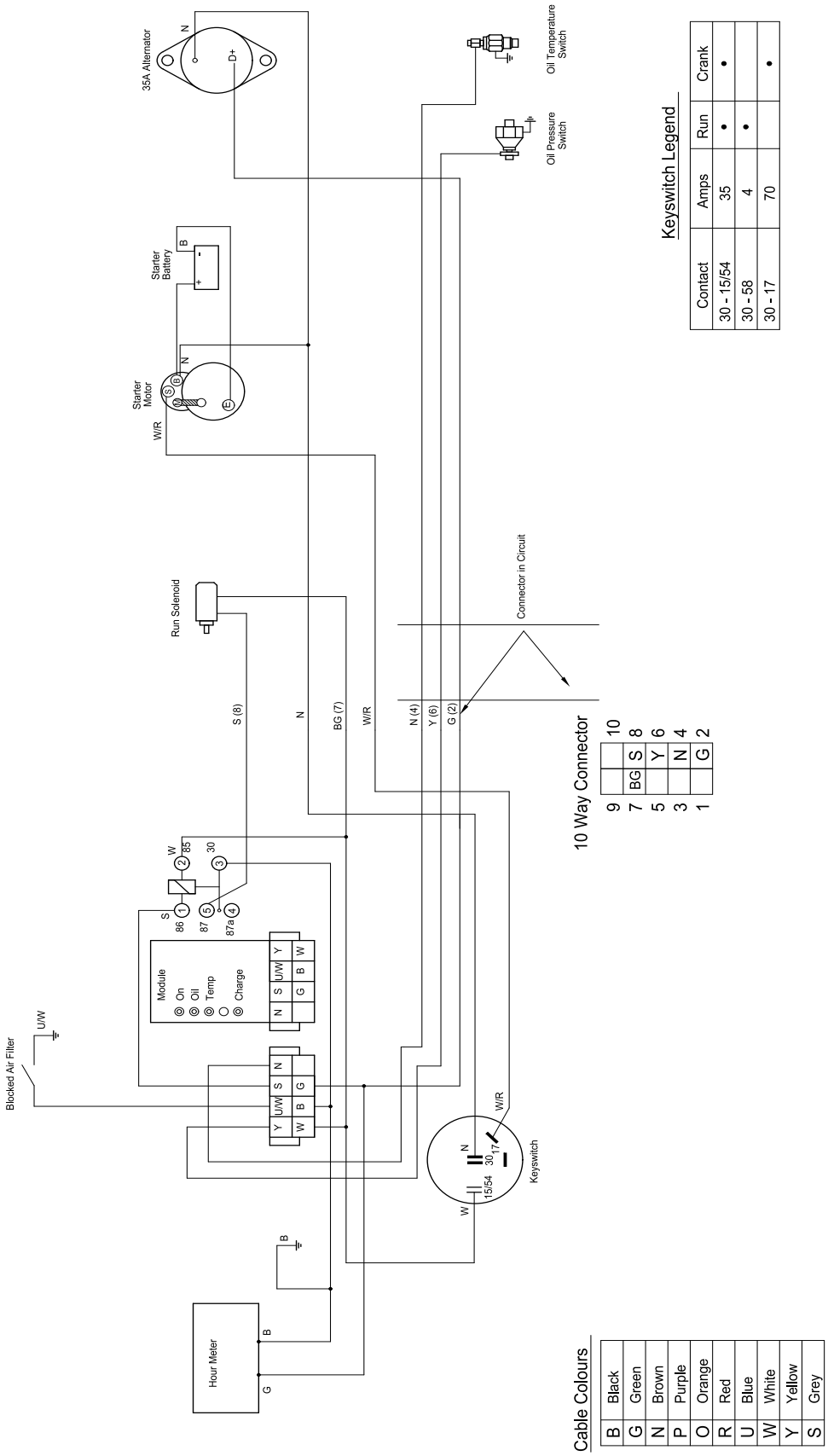
9.2 Fast Tow trailer Lighting Circuit



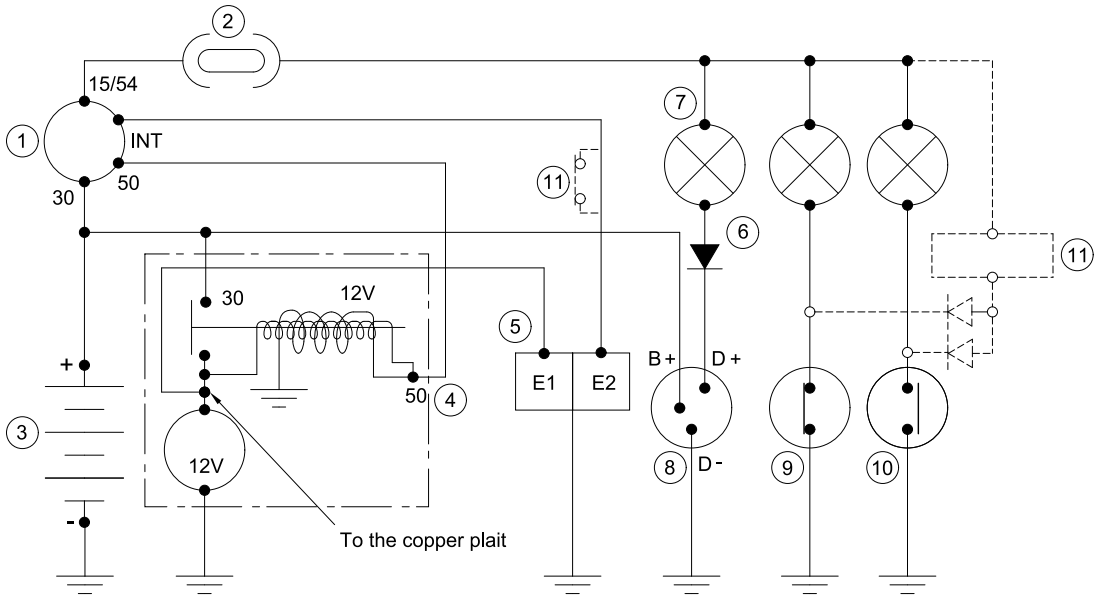
NOTE:

Front marker lights are for twin axle assemblies only.

9.3 Deutz – Wiring Diagram



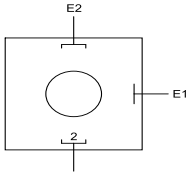
9.4 Detroit – Wiring Diagram



CONTINUOUS LINES – Engine stop control
CONTINUOUS LINES + DASHED LINES – Engine stop control with automatic device

ELECTROSTOP CONNECTION

RED: Pull
BLUE: Hold
GROUND: On the chassis



ELECTRO STOP CONNECTIONS

No	DESCRIPTION
1	Switch key
2	Fuse
3	12V Battery
4	12V Starter
5	Electrostop
6	Diode
7	Lampholder
8	12V Alternator
9	Low Oil Pressure Transmitter
10	High Oil Pressure Transmitter
11	Servo Relay

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